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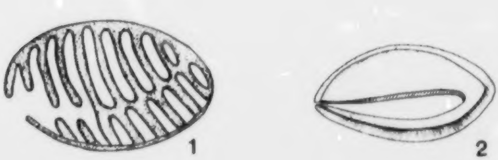
Introduction

The spiders treated in this book are the only Canadian representatives of a group known as the three-clawed hunters (Gertsch 1979). All of the Canadian forms live as wandering hunters, taking prey on the ground by stealth. They all possess, to some degree, a third or median claw at the tip of each leg tarsus. This third claw enables web-building spiders to walk and climb on aerial webs, and its reduction is apparently a consequence of the loss, in hunting spiders, of dependence on silken webs. This process has apparently occurred independently among the wolf spiders, the nurseryweb spiders, and the lynx spiders, for web builders occur in each of the three families in warmer parts of the world.

These spiders can be identified to family level by means of the key published in Part 5 of this series (Dondale and Redner 1978). The three families share the peculiar shape of the tapetum, which is a layer of light-reflecting cells within the secondary pairs of eyes (anterior lateral, posterior median, and posterior lateral eyes). Whereas in most spiders the tapetum takes the shape of a canoe (Fig. 2), in the groups treated here it has the shape of a grate, or lattice (Fig. 1) (Homann 1971). The closest relatives of the wolf spiders are probably the nurseryweb spiders (Dondale 1986), but the relationships of the lynx spiders to the other two groups are not yet known.

Collecting methods differ according to family. Wolf spiders can often be collected in large numbers in pitfall traps (Martin 1978), although an individual can usually be induced to run into a vial from the ground. Others may be found under logs or stones or by sifting ground litter (Martin 1978). Night collecting by means of a headlamp may be productive (Wallace 1937). Conley (1985) describes an effective method of extracting burrowing forms by wrapping adhesive tape around a paper clip and dangling the clip in the burrow. Nurseryweb spiders are rarely collected in pitfall traps and must be caught one by one on tree trunks, docks, or boulders near fresh



Figs. 1, 2. Diagrams of tapetums of spiders. 1, grate-shaped tapetum found in Lycosidae, Pisauridae, and Oxyopidae; 2, canoe-shaped tapetum found in most other spiders. After Homann (1971).

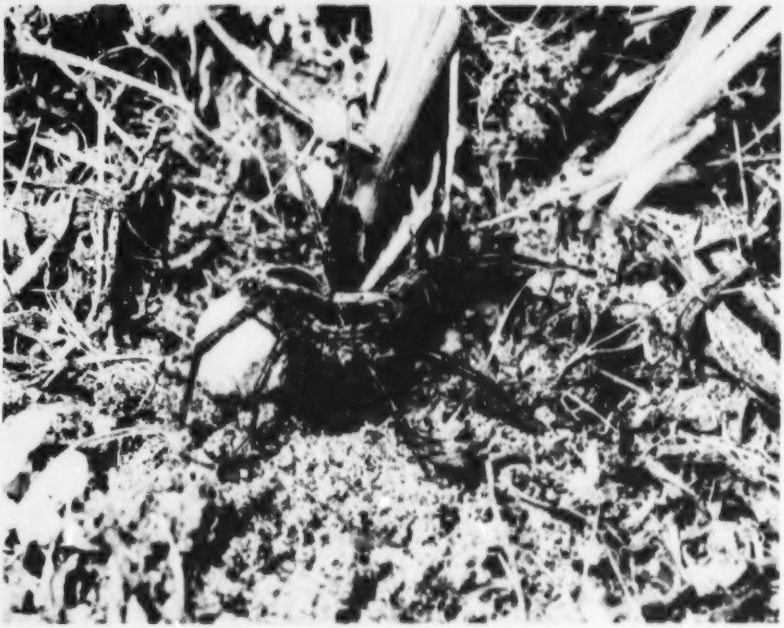


Fig. 3. *Schizocosa avida* female sunning egg sac over nest hole.

water. During daylight hours the spiders can also be found lying motionless on the dark undersides of partly submerged flat stones in shallow rivers or streams. Lynx spiders live exclusively in vegetation and are collected mainly by sweep nets and beating trays.

All three kinds of spider are preserved by immersion in 75% ethanol in neoprene-stoppered homeopathic vials or in jars (Martin 1978, pp. 99, 100). Dead spiders are immersed in 95% ethanol and are then examined and identified; this procedure reduces convection currents and consequent movement of the specimens. Magnifications of 6× to approximately 50× with a dissecting microscope are used.

Details of the palpus of a male wolf spider (see section entitled Anatomy) are examined by lifting the palea (Fig. 43) with the point of a needle; the palea can be folded back and later replaced, or it may be excised for drawing and then placed, with the remainder of the palpus, in a microvial within the homeopathic vial containing the spider's body. The copulatory tubes and spermathecae are examined by removal of the epigynum, followed by a brief clearing of the inner structures with oil of cloves.

Measurements given in this work include the following: total body length, measured from the anterior extremity of the carapace to the tip of the abdomen (to nearest 0.05 mm); carapace length,

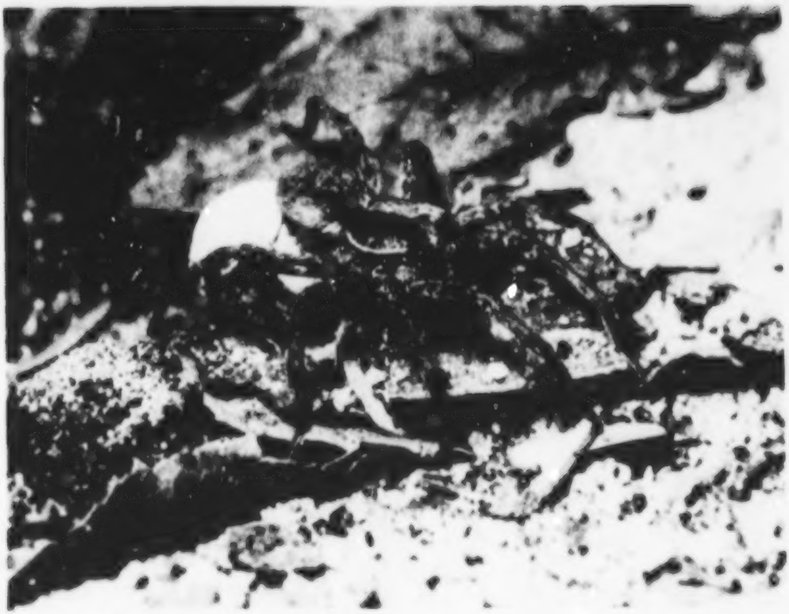


Fig. 4. *Hogna frondicola* female carrying egg sac.

measured from anterior extremity to posterior extremity along the middorsal line (to nearest 0.01 mm); and carapace width, measured at point of greatest width on the dorsal surface (to nearest 0.01 mm). For fewer than 10 specimens of a species, measurements are expressed as the range; for 10 or more, they are presented as the mean and one standard deviation.

Anatomy

The bodies of wolf, lynx, and nurseryweb spiders (Figs. 83, 553, 590) are elongated and either flattened or somewhat cylindrical. The two body divisions (cephalothorax and abdomen) are joined by a slender pedicel. The cephalothorax is covered dorsally by a shield-like or capsule-like carapace, which bears the eyes and the dorsal groove. The carapace is covered ventrally by a smaller flatter sclerite (the sternum) and by the lower lip, or labium. The principal mouthparts and the legs project from the membrane joining the edges of carapace and sternum.

The eyes, eight in number (Figs. 56, 441, 588), are in four pairs: the anterior median, anterior lateral, posterior median, and posterior lateral. They are arranged in either two or three transverse rows; a row may be straight, procurved, or recurved according to the family, genus, or species. Sometimes it is useful to speak of the anterior and posterior rows (and, in wolf spiders, of the middle row).

The principal mouthparts (Figs. 83, 509) are the pincer-like chelicerae and leg-like palpi. Each chelicera comprises a large basal segment and a fang. When at rest, the fang lies in a groove, the margins (promargin, retromargin) of which are armed with teeth. The palpi lie immediately behind the chelicerae and at the level of the mouth; their basal segments, the coxae, have expanded lobes that form the sides of the preoral cavity and contain glands that pour digestive fluids over the prey held by the fangs. The other segments of the palpi are the trochanter, femur, patella, tibia, tarsus, and a small claw-like pretarsus. In the male (Figs. 85, 88, 565, 568, 587, 589) the tarsus, pretarsus, and (to a lesser extent) the tibia of the palpus are modified to form the copulatory organ, the principal parts of which are a dorsal hollowed cymbium and the genital bulb. The genital bulb consists primarily of a convex well-sclerotized tegulum, within which are found the seminal duct and reservoir, and an intromittent organ, the embolus. The embolus usually rests on and is protected by a sclerite or membrane called the conductor. Associated with the embolus is usually a terminal apophysis, and associated with the tegulum is the median apophysis. The subtegulum is a small sclerite at the base of the tegulum. The palpal tibia in lynx and nurseryweb spiders has a stout well-sclerotized retrolateral apophysis; this apophysis is lacking in the wolf spiders, but a small stridulatory organ may occur at the juncture of tibia and cymbium. The labium, or lower lip, closes the preoral cavity posteriorly.

The legs (Fig. 83) are in four pairs numbered I to IV from the anterior end. The segments from base to tip are as follows: coxa, trochanter, femur, patella, tibia, tarsus (subdivided into basitarsus and distitarsus), and pretarsus. The pretarsus bears three claws, a dorsal pair and a ventral unpaired claw. The distitarsus and (sometimes) the basitarsus (or even the tibia) may bear a scopula, and most segments have macrosetae arranged in quite definite patterns.

The abdomen (Fig. 83) usually shows a heart mark of contrasting color and various patterns characteristic of the species or genus. Ventrally, the abdomen is traversed by the genital groove (Fig. 77), in which lies the opening of the internal genitalia (testes or ovaries) to the outside. The female's opening is marked by a sclerotized plate, the epigynum, which also bears the paired copulatory openings. The openings direct the embolus of the male into the copulatory tubes (Fig. 79), which in turn lead to the sac-like spermathecae where semen is stored until oviposition.

Respiration is by book lungs and tracheae. The book lungs open through a pair of slits lateral to the genital groove, and the tracheae open through a single spiracle situated immediately anterior to the spinnerets. The spinnerets are in three pairs, forming a compact cluster at the posterior end of the abdomen; they are the anterior, median, and posterior spinnerets.

Additional, more specialized anatomical terms are given in the introduction to each family and in the glossary. Spiders less than approximately 7 mm in total length are treated in the descriptions as small in size; those in the range of 7–15 mm are treated as medium, and those over 15 mm are treated as large.

Family Lycosidae—wolf spiders

The Lycosidae, or wolf spiders, found in Canada and Alaska are hunters that use their relatively keen vision and strong legs in the chase. Prey capture is marked by "vigor and power" (Gertsch 1979), as the spiders pursue, pounce, bite, crush, and digest many kinds of ground-dwelling invertebrates. Not all lycosids are hunters, however; some of the tropical and subtropical members of the family retain the more primitive lifestyle of web building (Brady 1962, Lehtinen and Hippa 1979, Hippa and Lehtinen 1983). The members of one genus even exhibit a kind of "subsocial" behavior in which the mother feeds her young (Brach 1976).

Some wolf spiders occupy mainly wet habitats such as bogs and swamps (*Pirata* spp.). Others are characteristic of grassy meadows or deciduous forests (*Schizocosa* spp., *Trochosa* spp.), and still others are partly (*Hogna* spp.) or completely subterranean (*Geolycosa* spp.). Members of a few genera occupy a diversity of habitats from arctic or alpine tundra, or both, to prairies, salt marshes, sandy beaches, and dense forests (*Pardosa* spp., *Arctosa* spp.); these often dark-bodied diurnal forms may be seen running in short bursts over soil, litter, rocks, or short grass. Activity may continue in winter under snow (Aitchison 1978, 1984*a*, 1984*b*).

One of the characteristic behavioral features of wolf spiders is the carrying of the egg sac on the spinnerets of females (Figs. 3, 4). The female transports the sac wherever she goes throughout the period of incubation and carefully hunts for it if she accidentally drops it. Even more peculiar is the carrying of the newly hatched spiderlings in a cluster on the female's abdomen. Rovner et al. (1973) describe the special setae on the abdomen by which the young are enabled to cling. After several days, during which the young spiders eat nothing, they drop off and take up independent lives. Stratton (1985) reviews recent behavioral research on the wolf spiders.

Description. Total length of adults 2.2–35.0 mm. Carapace longer than wide, usually rather high and narrow, black, gray, brown, or dull red, covered with short recumbent setae. Eyes in 3 rows (Figs. 56, 441); anterior row procurved, straight, or recurved, not impinging on middle row, with small anterior median and anterior lateral eyes; middle row located in prominent position at front of carapace, with posterior medians, which are the largest eyes; posterior row containing posterior lateral eyes; posterior lateral eyes usually somewhat smaller than posterior median eyes and located posterolateral to them. Chelicerae large, powerful; retromargin with 2–4 (usually 3) teeth. Legs long, usually stout, usually scopulate, with 3 claws (median claw variably reduced); trochanters with deep notch distally on ventral surface. Abdomen ovoid, covered dorsally and ventrally with short recumbent setae; anterior extremity of abdomen with cluster of longer erect curved setae. Tibia of male palpus lacking apophysis; cymbium and tibia sometimes with minute stridulatory organ at their junction (Rovner 1975); embolus and (when present) terminal apophysis usually arising from sclerotized palea; palea consisting of prominent plate with distensible sac at its base (Figs. 43, 85); embolus usually long and slender, sometimes short and truncate; terminal apophysis minute and arising at base of embolus, or more prominent and well-sclerotized, sometimes beak-like, lobe-like, tooth-like, scale-like, sickle-shaped, or absent; median apophysis flexibly attached to distal margin of tegulum by small membrane, often with shallow longitudinal groove on dorsal surface, often with stout spur on ventral surface, rarely small and pad-like, with distal process; distal process extending retrolaterally or retrolaterodistally; conductor formed of tegular lobe (Figs. 41, 47, 85, 531), of sclerite at base of palea (Figs. 142, 209, 223), of median apophysis (Figs. 346, 349), or of terminal apophysis (Figs. 364, 370). Epigynum (Figs. 6, 77) usually with hood, often with inverted T-shaped median septum; median septum sometimes inconspicuous or absent; spermathecae (Figs. 7, 79) usually large, bulbous, well-sclerotized, sometimes elongate and slender or club-shaped, sometimes with spermathecal organ (Figs. 343, 382).

Comments. Wolf spiders share with the nurseryweb and lynx spiders a grate-shaped tapetum in the secondary eyes. They share only with the nurseryweb spiders the carrying of egg sacs by the females. Nurseryweb spiders carry the egg sacs in their chelicerae. Wolf spiders carry them by means of their spinnerets, and they also transport the young on their abdomens with the aid of special setae. Wolf spiders are the only representatives of the grate-shaped tapetum group that lack a tibial apophysis on the male palpus. They also possess enlarged posterior median and posterior lateral eyes in 2 rows, a condition approached in some species of the family Cycloctenidae; these species are not found in North America.

Classification of the world wolf spiders at subfamily level was discussed by Zyuzin (1985) and Dondale (1986). The family includes nearly 2000 species around the world, of which approximately 300 occur in North America. Fourteen genera and 107 species are represented or thought to be represented in Canada and Alaska.

Key to genera of Lycosidae

Males

1. Tegular lobe large, conspicuous, supporting tip of embolus (Figs. 41, 47, 85) 2

Tegular lobe smaller or absent (if moderately large, then chelicerae with only 2 retromarginal teeth) 7

2(1). Terminal apophysis sickle-shaped (Figs. 8, 19, 43) 3

Terminal apophysis minute and scale-like (Fig. 85) or conspicuously enlarged and flattened (Fig. 105), or lobe-like (Fig. 115) 5

3(2). Embolus terminating in small curl (Fig. 8). Carapace with paired longitudinal streaks in pale area anterior to dorsal groove (Fig. 5) .... ***Trochosa*** (p. 22)

Embolus curved, straight, or sinuous at tip. Carapace rarely with paired longitudinal streaks in pale area anterior to dorsal groove 4

4(3). Carapace distinctly higher toward anterior end (Fig. 15) .... ***Geolycosa*** (p. 26)

Carapace approximately uniform in height between dorsal groove and posterior row of eyes .... ***Hogna*** (p. 34)

5(2). Terminal apophysis minute, scale-like; embolus with intromittent part short, usually angled (Fig. 85) .... ***Schizocosa*** (p. 53)

Terminal apophysis longer, with tip reaching as far as tip of embolus (Fig. 105), or lobe-like (Fig. 115); embolus usually longer, not angled 6

6(5). Embolus conspicuously enlarged and flattened (Fig. 105) .... ***Gladicosa*** (p. 87)

Embolus slender and sinuous (Fig. 115) .... ***Varacosa*** (p. 91)

7(1). Conductor lying along basal margin of palea (dissection required; Figs. 209, 213, 273). Carapace usually vertical at sides near anterior end, dorsally convex at level of posterior row of eyes (Figs. 175, 183) .... ***Pardosa*** (p. 97)

Conductor situated elsewhere on genital bulb. Carapace usually sloped at sides near anterior end, not dorsally convex at level of posterior row of eyes 8

8(7). Median apophysis with 2 pointed retrolateral processes of different lengths; terminal apophysis beak-like (Figs. 345, 347) ... ***Allocosa*** (p. 231)

Median apophysis with 1 or no retrolateral processes; terminal apophysis not beak-like ... 9

9(8). Median apophysis massive, occupying one-half length or more of genital bulb (Figs. 360, 365) ... 10

Median apophysis smaller, occupying less than one-half length of genital bulb ... 11

10(9). Median apophysis elongate, longitudinal, attached at middle and free at both ends (Fig. 360) ... ***Trabeops*** (p. 236)

Median apophysis broader, with large curved distal process (Fig. 365) ... ***Trebacosa*** (p. 240)

11(9). Embolus minute, situated at distal end of genital bulb; subtegulum enlarged, extending one-quarter to one-half length of genital bulb along prolateral margin (Figs. 369, 370). Carapace usually with V-shaped mark that extends between dorsal groove and posterior lateral eyes (Figs. 366, 384, 403, 420, 424, 432) ... ***Pirata*** (p. 242)

Embolus larger, arched across genital bulb from prolateral side to retrolateral side; subtegulum smaller, restricted to base of genital bulb (Figs. 436, 445, 499). Carapace lacking V-shaped mark between dorsal groove and posterior lateral eyes ... 12

12(11). Median apophysis minute, pad-like (Fig. 436) ... ***Melocosa*** (p. 275)

Median apophysis larger, well sclerotized, elongate (Figs. 445, 499) ... 13

13(12). Cheliceral retromargin with 3 teeth. Carapace glabrous, usually pale or mottled or both. Terminal apophysis in two parts or, if in one part, having two different degrees of sclerotization (Fig. 445) ... ***Arctosa*** (p. 278)

Cheliceral retromargin with 2 teeth (Fig. 509). Carapace with dense covering of setae. Terminal apophysis pale and lobe-like or with single sclerotized point (Figs. 499, 534) ... ***Alopecosa*** (p. 298)

Key to genera of Lycosidae

Females

1. Carapace with V-shaped mark between dorsal groove and posterior lateral eyes (Figs. 366, 384, 403, 420, 424, 432) .... ***Pirata*** (in part) (p. 242)

Carapace lacking V-shaped mark between dorsal groove and posterior lateral eyes 2

2(1). Median septum small, triangular, depressed (Fig. 362) ....***Trebacosa*** (p. 240)

Median septum larger, not triangular, rarely depressed, sometimes absent 3

3(2). Femur I with midventral row of stiff erect setae. Median septum slender posteriorly, broadly expanded anteriorly (Fig. 361). Tibia I with 4 pairs of long ventral macrosetae .... ***Trabeops*** (p. 236)

Femur I lacking midventral row of stiff erect setae. Median septum wider posteriorly, rarely broadly expanded anteriorly. Tibia I usually with 3 or fewer pairs of ventral macrosetae 4

4(3). Epigynum with distinct median septum (Figs. 11, 77, 127), rarely indistinct (Figs. 172, 177) 6

Epigynum lacking median septum (Figs. 344, 397) 5

5(4). Spermathecal organs visible through integument, lying along genital groove (Fig. 397) .... ***Pirata*** (in part) (p. 242)

Spermathecal organs not visible through integument, extending anteriorly (Fig. 344) .... ***Allocosa*** (p. 231)

6(4). Carapace distinctly increasing in height from dorsal groove to posterior row of eyes (Fig. 15) .... ***Geolycosa*** (p. 26)

Carapace approximately uniform in height from dorsal groove to posterior row of eyes 7

7(6). Median septum with tips of transverse piece angled sharply anteriorly, flanked by paired bubble-like swellings (Figs. 111, 113) .... ***Varacosa*** (p. 91)

Median septum with tips of transverse piece not angled anteriorly, not flanked by bubble-like swellings 8

8(7). Median septum restricted to anterior two-thirds of atrium (Fig. 106) .... ***Gladicosa*** (p. 87)

Median septum extending to posterior margin of epigynum 9

9(8). Median septum with ends of transverse piece excavated (Figs. 48, 53), excised (Fig. 78), or broad and truncated (Fig. 77) .... ***Schizocosa*** (p. 53)

Median septum with ends of transverse piece not excavated or excised, not broad and truncate 10

10(9). Carapace convex dorsally at level of posterior row of eyes, with sides usually vertical or essentially so at anterior end (Figs. 175, 183) .... ***Pardosa*** (p. 97)

Carapace not convex dorsally at level of posterior row of eyes, with sides sloped at anterior end 11

11(10). Cheliceral retromargin with 2 teeth (Fig. 509) 12

Cheliceral retromargin with 3 teeth 13

12(11). Epigynum with hood having deep cavities; median septum in shape of inverted T approximately as long as wide (Fig. 6). Carapace with paired longitudinal streaks within pale area anterior to dorsal groove (Fig. 5) .... ***Trochosa*** (in part) (p. 22)

Epigynum without hood or with hood having shallow cavity or cavities; median septum vase-shaped or tongue-shaped (Figs. 492, 512, 541). Carapace lacking paired longitudinal streaks anterior to dorsal groove.......... ***Alopecosa*** (p. 298)

13(11). Median septum broad, tongue-shaped, fully covering atrium (Fig. 434) .... ***Melocosa*** (p. 275)

Median septum narrower, not tongue-shaped, partly exposing atrium 14

14(13). Median septum approximately as long as wide (Fig. 6); carapace with paired longitudinal streaks within pale area anterior to dorsal groove (Fig. 5) .... ***Trochosa*** (in part) (p. 22)

Median septum distinctly longer than wide (Figs. 22, 448); if median septum as long as wide, then carapace lacking paired longitudinal streaks in pale area anterior to dorsal groove 15

15(14). Median septum in form of inverted T, with longitudinal piece as long as or longer than transverse piece (Fig. 22) .... ***Hogna*** (p. 34)

Median septum variously shaped but not in form of inverted T; longitudinal piece shorter than transverse piece (Figs. 439, 448) .... ***Arctosa*** (p. 278)

Clé des genres de Lycosidae

Mâles

1. Lobe du tégulum gros, bien en évidence, supportant l'extrémiré de l'embolus (fig. 41, 47, 85) 2

Lobe du tegulum plus petit ou manquant (si modérément gros, alors les chélicères avec seulement deux dents marginales arrière) 7

2(1). Apophyse terminale en forme de faucille (fig. 8, 19, 43) 3

Apophyse terminale minuscule et en forme d'écaille (fig. 85), ou nettement élargie et aplatie (fig. 105), ou en forme de lobe (fig. 115) 5

3(2). Embolus se terminant en petite boucle (fig. 8). Partie dorsale de l'encéphalo avec deux raies longitudinales dans la zone pâle antérieure au sillon dorsal (fig. 5) ....
.... ***Trochosa*** (p. 22)

Embolus courbé, droit ou sinueux à l'extrémité. Partie dorsale de l'encéphalo rarement avec deux raies longitudinales dans la zone pâle antérieure au sillon dorsal
.... 4

4(3). Partie dorsale de l'encéphalo nettement plus haute vers l'extrémité antérieure (fig. 15) .... ***Geolycosa*** (p. 26)

Partie dorsale de l'encéphalo approximativement uniforme en hauteur entre le sillon dorsal et la rangée des yeux postérieurs .... ***Hogna*** (p. 34)

5(2). Apophyse terminale minuscule, en forme d'écaille; embolus avec la partie intromittente courte, généralement formant un angle (fig. 85) .... ***Schizocosa*** (p. 53)

Apophyse terminale plus longue, dont l'extrémité se prolonge jusqu'à l'extrémité de l'embolus (fig. 105), ou en forme de lobe (fig. 115); embolus généralement plus long, ne formant pas un angle 6

6(5). Embolus nettement élargi et aplati (fig. 105) ....
.... ***Cladicosa*** (p. 87)

Embolus plus grêle et sinueux (fig. 115) ....
.... ***Varacosa*** (p. 91)

7(1). Conducteur se prolongeant le long de la marge basale de la paléa (dissection requise, fig. 209, 213, 273). Partie dorsale de l'encéphalo généralement verticale sur les côtés près de l'extrémité antérieure, convexe dorsalement au niveau de la rangée des yeux postérieurs (fig. 175, 183) .... ***Pardosa*** (p. 97)

Conducteur situé ailleurs sur le bulbe génital. Partie dorsale de l'encéphalo généralement en pente sur les côtés près de l'extrémité antérieure, non convexe dorsalement au niveau de la rangée des yeux postérieurs 8

8(7). Apophyse médiane avec deux processus pointus du côté arrière de longueur différente; apophyse terminale en forme de bec (fig. 345, 347) .... ***Allocosa*** (p. 231)

Apophyse médiane avec ou sans processus; apophyse terminale non en forme de bec 9

9(8). Apophyse médiane grosse, occupant la moitié ou plus de la longueur du bulbe génital (fig. 360, 365) 10

Apophyse médiane plus petite, occupant moins que la moitié de la longueur du bulbe génital 11

10(9). Apophyse médiane allongée, longitudinale, attachée à son milieu et libre aux deux extrémités (fig. 360) .... ***Trabeops*** (p. 236)

Apophyse médiane plus large, avec processus distal courbé (fig. 365) .... ***Trebacosa*** (p. 240)

11(9). Embolus minuscule, se prolongeant jusqu'au bulbe génital; subtegula élargie, étendue sur le quart ou la moitié de la longueur du bulbe génital le long de la marge prolatérale (fig. 369, 370). Partie dorsale de l'encéphalo généralement avec signe en V dans l'espace entre le sillon dorsal et les yeux postérieurs latéraux (fig. 366, 384, 403, 420, 424, 432) .... ***Pirata*** (p. 242)

Embolus plus large, arqué sur le bulbe génital du côté antérieur au côté rétrolatéral; subtegula plus petite, limitée à la base du bulbe génital (fig. 436, 445, 499). Partie dorsale de l'encéphalo sans signe en V entre le sillon dorsal et les yeux postérieurs latéraux 12

12(11). Apophyse médiane minuscule, en forme de bourrelet (fig. 436) .... ***Melocosa*** (p. 275)

Apophyse médiane plus grosse, très sclérotisée, allongée (fig. 445, 499) 13

13(12). **Marge postérieure des chélicères avec trois dents. Partie dorsale de l'encéphalo glabre, généralement pâle et (ou) marbré. Apophyse terminale en deux parties ou, si en une seule, avec deux niveaux de sclérotisation (fig. 445) .... *Arctosa* (p. 278)**

Marge postérieure chélicères avec deux dents (fig. 509). Partie dorsale de l'encéphalo recouverte de soies denses. Apophyse terminale pâle et en forme de lobe ou avec une seule extrémité sclérotisée (fig. 499, 53[illegible]) .... *Alopecosa* (p. 298)

Clé des genres de Lycosidae

Femelles

1. **Partie dorsale de l'encéphalo avec signe en V entre le sillon dorsal et les yeux postérieurs latéraux (fig. 366, 384, 403, 420, 424, 432) .... *Pirata* (en partie) (p. 242)**

Partie dorsale de l'encéphalo sans signe en V entre le sillon dorsal et les yeux postérieurs latéraux 2

2(1). **Septum médian petit, triangulaire, déprimé (fig. 362) .... *Trebacosa* (p. 240)**

Septum médian plus gros, non triangulaire, rarement déprimé, quelquefois manquant 3

3(2). **Fémur I avec rangée mi-ventrale de soies rigides et dressées. Septum médian grêle postérieurement, largement dilaté antérieurement (fig. 361). Tibia I avec 4 paires de larges soies ventrales longues .... *Trabeops* (p. 236)**

Fémur I sans rangée mi-ventrale de soies rigides et dressées. Septum médian plus large postérieurement, rarement dilaté antérieurement. Tibia I généralement avec 3 larges soies ventrales ou moins 4

4(3). **Épigyne avec septum médian distinct (fig. 11, 77, 127), rarement indistincte (fig. 172, 177) 6**

Épigyne sans septum médian (fig. 344, 397) 5

5(4). **Organes spermathécaux visibles au travers de l'intégument, se prolongeant le long du sillon génital (fig. 397) .... *Pirata* (en partie) (p. 242)**

Organes spermathécaux non visibles au travers de l'intégument, se prolongeant antérieurement (fig. 344) .... *Allocosa* (p. 231)

6(4). Partie dorsale de l'encéphalo nettement surélevée entre le sillon et la rangée postérieure des yeux (fig. 15) .... ***Geolycosa*** (p. 26)

Partie dorsale de l'encéphalo approximativement uniforme en hauteur entre le sillon dorsal et la rangée postérieure des yeux 7

7(6). Septum médian avec les extrémités de la pièce transversale en angle aigu antérieurement, flanqué de paires de renflements en forme de bulle (fig. 111, 113) .... ***Varacosa*** (p. 91)

Septum médian avec les extrémités de la pièce transversale non en angle, non flanqué de renflements en forme de bulle 8

8(7). Septum médian limité aux deux tiers antérieurs de l'atrium (fig. 106) .... ***Gladicosa*** (p. 87)

Septum médian étendu à la marge postérieure de l'épigyne.. 9

9(8). Septum médian avec les extrémités de la pièce transversale excavées (fig. 48, 53), coupées (fig. 78) ou larges et tronquées (fig. 77) .... ***Schizocosa*** (p. 53)

Septum médian avec les extrémités de la pièce transversale non excavées, ni coupées, ni larges et tronquées 10

10(9). Partie dorsale de l'encéphalo convexe au niveau de la rangée des yeux postérieurs, avec côtés généralement verticaux ou toujours verticaux à l'extrémité antérieure (fig. 175, 183) .... ***Pardosa*** (p. 97)

Partie dorsale de l'encéphalo non convexe au niveau de la rangée des yeux postérieurs, aux côtés en pente à l'extrémité antérieure 11

11(10). Chélicères avec deux dents postérieures (fig. 509) 12

Chélicères avec trois dents postérieures 13

12(11). Épigyne dont le capuchon a des cavités profondes; septum médian en forme de T inversé, approximativement égal en longueur et largeur (fig. 6). Partie dorsale de l'encéphalo avec deux stries longitudinales dans la zone pâle antérieure au sillon dorsal (fig. 5) .... ***Trochosa*** (en partie) (p. 22)

Épigyne sans capuchon ou avec capuchon ayant des cavités parfois peu profondes; septum médian en forme de vase ou de langue (fig. 492, 512, 541). Partie dorsale de l'encéphalo sans paires de raies longitudinales antérieures au sillon dorsal .... ***Alopecosa*** (p. 298)

13(11). Septum médian large, en forme de langue, couvrant totalement l'atrium (fig. 434) .... ***Melocosa*** (p. 275)

Septum médian plus étroit, non en forme de langue, couvrant l'atrium en partie 14

14(13). Septum médian approximativement égal en longueur et en largeur (fig. 6), et partie dorsale de l'encéphalo avec deux raies longitudinales dans la zone pâle antérieure au sillon dorsal (fig. 5) .... ***Trochosa*** (en partie) (p. 22)

Septum médian distinctement plus long que large (fig. 22, 448), mais, si égal en longueur et largeur, alors partie dorsale de l'encéphalo sans les deux raies longitudinales dans la zone pâle antérieure au sillon dorsal 15

15(14). Septum médian en forme de T inversé, avec pièce longitudinale d'une même longueur ou plus long que la pièce transversale (fig. 22) .... ***Hogna*** (p. 34)

Septum médian en formes diverses mais non en forme de T inversé; pièce longitudinale plus courte que la pièce transversale (fig. 439, 448) .... ***Arctosa*** (p. 278)

Genus *Trochosa* C.L. Koch

Spiders of the genus *Trochosa* are of medium size and possess rather thick bodies and legs. The predominant color is reddish brown. They are seldom seen in the open, as they apparently move little and prefer the relatively dark and moist spaces in deep grass or under surface litter. Moreover, they appear to be nocturnal. Females tend to make shallow nest holes in the top layers of soil, where they hold their round white egg sacs until hatching occurs.

Description. Total length 9–14 mm. Carapace dark, rather broad, high, rounded dorsally from side to side, sloped in front, approximately uniform in height between dorsal groove and posterior row of eyes; median band indistinct, pale, expanding anterior to dorsal groove and enclosing pair of dark longitudinal streaks (Fig. 5); setae short, rather sparse. Anterior row of eyes straight or somewhat procurved, nearly as long as middle row; anterior median eyes larger than anterior lateral eyes and usually somewhat closer to the latter than to each other. Chelicerae large, powerful; promargin with 3 teeth; retromargin with 2 or 3 teeth. Sternum reddish brown. Legs rather short, stout, carrying body close to substrate, reddish brown; scopulae sparse; femur I with 2 dorsal macrosetae, 1 or 2 prolaterals; tibia I with no dorsal macrosetae, 1 or 2 prolaterals, no retrolaterals, 3 pairs of ventrals; basitarsus I with no dorsal macrosetae, 1 or 2 prolaterals, 1 retrolateral, 2 pairs of ventrals (plus an unpaired ventral at tip). Abdomen thick, dark, with black reticulations; heart mark reddish or yellowish; venter yellowish brown; dorsum with cluster of long curved erect setae at anterior end. Cymbium with no or 1 terminal macroseta; terminal apophysis sickle-shaped; embolus arising prolaterodistally on palea; embolus curved, slender, with tip lying on large lobe of tegulum; tegulum functioning as conductor (Fig. 8); median apophysis transverse, rather long and stout, with spur near middle. Epigynum hooded; atrium shallow; median septum short, broad, in shape of inverted T; copulatory openings located at anterior margin of transverse part of median septum; hood with paired deep cavities (Fig. 6). Copulatory tubes short, broad; spermathecae slender, tapered, extending anteriorly (Fig. 7).

Comments. Members of the genus *Trochosa* are distinguished from those of other lycosid genera by the following characteristics: body size medium; body and legs thick; carapace with paired dark longitudinal streaks between dorsal groove and posterior row of eyes; anterior row of eyes as wide as middle row; cymbium with 1 terminal macroseta or none; terminal apophysis sickle-shaped; median septum in shape of inverted T; hood cavities paired and deep; and spermathecae slender, tapered, and extending anteriorly.

The genus *Trochosa* comprises a world fauna of approximately 60 species, many of which are currently cataloged in this genus but may belong elsewhere. Brady (1979) revised the single North American species, treating it as congeneric with those here treated as members of the genus *Varacosa*. Engelhardt (1964) reviewed the taxonomic validity of *T. terricola* in relation to the three closely related European species.

Trochosa terricola Thorell

Figs. 5–8; Map 1

Trochosa terricola Thorell, 1856:171; Palmgren 1939:63, figs. 99, 100; Holm 1947:14, figs. 8 (pl. 9), 19, 20 (pl. 2); Brady 1979:177, figs. 1, 2, 10–16, 28–31.

Lycosa pratensis Emerton, 1885:483, figs. 4, 4*a*, 4*b* (pl. 46); Chamberlin 1908:225, 261, fig. 3 (pl. 21).

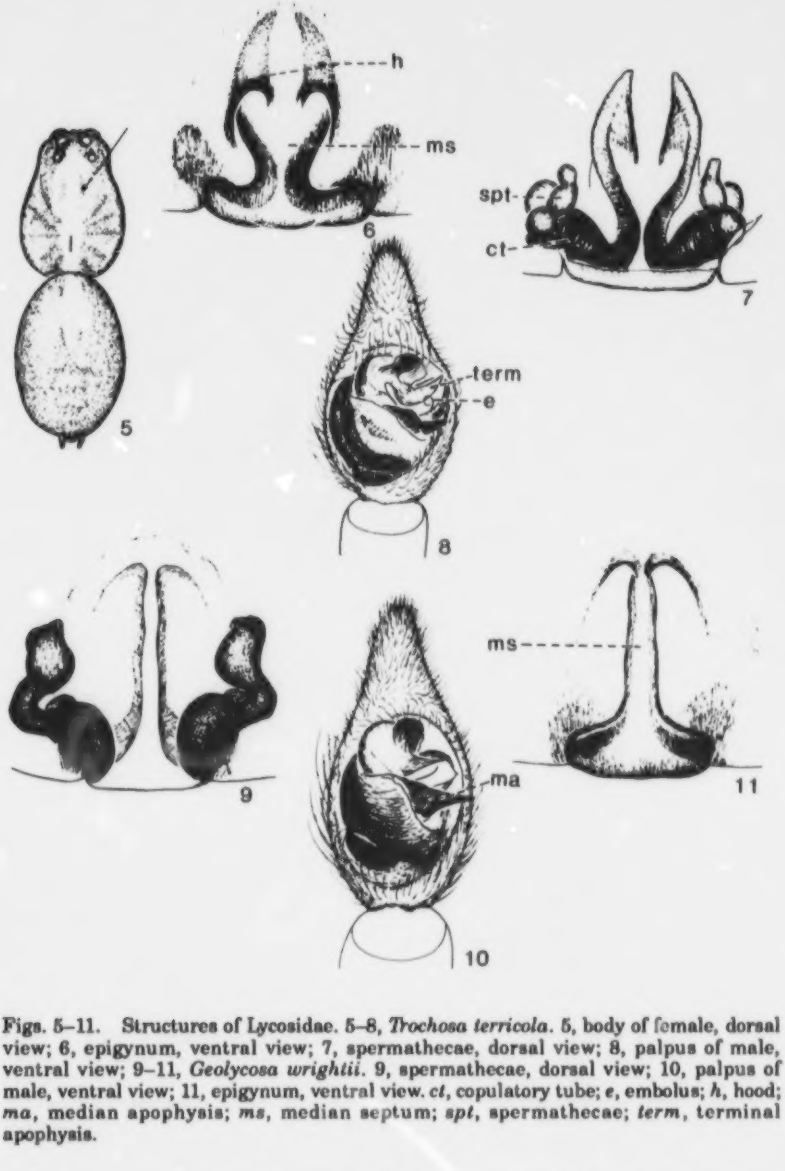
Lycosa terricola pallida Nosek, 1904:4.

Lycosa orophila Chamberlin and Gertsch, 1929:108.

Trochosa pratensis orophila: Chamberlin and Ivie, 1947:24.

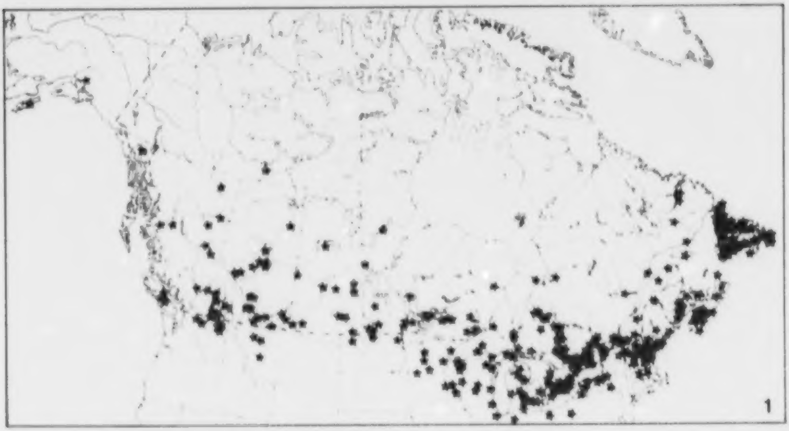
Trochosa pratensis: Kaston 1948:330, figs. 1092–1094 (pl. 56), 1117, 1118 (pl. 57).

Male. Total length 8.12 ± 0.63 mm; carapace 4.11 ± 0.28 mm long, 2.86 ± 0.23 mm wide (20 specimens measured). Carapace with



Figs. 5–11. Structures of Lycosidae. 5–8, *Trochosa terricola*. 5, body of female, dorsal view; 6, epigynum, ventral view; 7, spermathecae, dorsal view; 8, palpus of male, ventral view; 9–11, *Geolycosa wrightii*. 9, spermathecae, dorsal view; 10, palpus of male, ventral view; 11, epigynum, ventral view. *ct*, copulatory tube; *e*, embolus; *h*, hood; *ma*, median apophysis; *ms*, median septum; *spt*, spermathecae; *term*, terminal apophysis.

dark rim; lateral areas dark brownish orange or reddish brown; median band pale, expanding anterior to dorsal groove, enclosing paired dark longitudinal bands (as in Fig. 5). Chelicerae with 3 teeth



Map 1. Collection localities of *Trochosa terricola*.

on promargin, 2 or 3 on retromargin. Sternum reddish brown; setae numerous, semierect, short, dark. Legs yellow or pale reddish brown basally, dark reddish distally, lacking dark rings; coxae with many semierect short dark setae (like those on sternum). Abdomen dull reddish, with indistinct black lateral areas and posterior chevrons or with entire dorsum reticulated with black; venter yellowish brown. Tibia of palpus about 1.8 times as long as wide, widest distally; terminal apophysis broad, sickle-shaped, arising on basal margin of palea, and extending somewhat beyond tip of embolus; embolus arising prolaterodistally on palea, slender and curled at tip; pars pendula broad, hyaline, on basal half of embolus; median apophysis rather short, stout, sinuous, with spur directed ventrally (Fig. 8).

Female. Total length 9.80 ± 1.41 mm; carapace 4.60 ± 0.41 mm long, 3.30 ± 0.32 mm wide (20 specimens measured). Color essentially as in male, but carapace sometimes with indistinct broken submarginal bands (Fig. 5). Epigynum hooded; hood cavities broad and deep; atrium shallow; median septum short, broad (length approximately equal to width), in shape of inverted T (Fig. 6); copulatory openings situated at anterior margins of transverse part of median septum. Copulatory tubes short, dark, bulbous; spermathecae slender, pointed, extending anteriorly approximately one-half length of epigynum (Fig. 7).

Comments. Specimens of *T. terricola* are distinguished by the following characteristics: body brownish or reddish; legs yellowish or reddish and lacking dark rings, terminal apophysis sickle-shaped; embolus curled at tip; epigynal hood cavities broad and deep; median septum in shape of inverted T; and spermathecae slender and pointed. Variation in the number of retromarginal teeth on the chelicerae is partly geographical (Brady 1979).

Range. Alaska to Newfoundland; south to northern California, Arizona, and south-central Texas.

Biology. Specimens are usually collected under logs or stones in somewhat shady fields and at woods' edges. Engelhardt (1964) compared this species with three closely related ones in Germany, using as a data base their anatomy, behavior, life history, and response to microclimatic factors. Workman (1978) investigated the field life history and mortality in England. Adults have been collected in all months of the year. Maturity is apparently attained in autumn, and mating takes place the following spring (Hackman 1954). Egg sacs were recorded in July.

Genus *Geolycosa* Montgomery

Members of the genus *Geolycosa* are medium-sized to large hairy ambushers with powerful chelicerae and legs. These spiders spend virtually their whole life in burrows in the soil; if removed, they appear confused. As shown by Miller and Miller (1984), the diameter of the burrow is closely correlated with the spider's size, a relationship that these authors were unable to show for burrowers in other lycosid genera. Adult males, which tend to be short-lived, abandon their domiciles only at mating time, and even the young spiderlings disperse only short distances from the maternal burrow before making their own excavations.

Burrows are vertical or nearly so, rather deep (depths up to 170 cm have been recorded), and situated in sandy fields, sand dunes, or beaches above the high-tide mark. The upper part of the burrow is reinforced with silk. The entrance may be marked by a so-called turret or parapet up to 2 cm high and constructed of plant debris and sand grains bound together with silk. The spider hunts by crouching with front legs over the turret; when an insect passes nearby, the spider lunges forward suddenly and carries it into the burrow. The skeletal remains of these meals accumulate at the bottom.

These spiders can be excavated from their burrows or they can be enticed, with a grass stem, to leave. They can also be induced to build burrows in terrariums containing moist sand (Gwynne and Watkiss 1975). Bits of dry plant debris are used in turret construction. They should be individually caged because they are fierce predators, and cannibalism can soon reduce the culture to a single well-fed individual.

Description. Total length 14.0–18.0 mm. Carapace elongate, distinctly elevated between dorsal groove and posterior row of eyes, then sloped to middle row of eyes, nearly vertical at front (Fig. 15); median and submarginal bands absent. Anterior row of eyes straight or somewhat procurved, shorter than middle row; anterior median eyes somewhat larger than anterior lateral eyes and somewhat closer to the latter than to each other. Chelicerae large, hairy; promargin and retromargin each with 3 teeth. Sternum pale or dark, usually hairy. Legs long, stout (particularly in females), hairy, often with dark areas on certain segments; scopulae dense; femur I with 3 dorsal macrosetae, 2 or 3 prolaterals, 2 or 3 retrolaterals; tibia I with 0–2 dorsal macrosetae, 1 or 2 prolaterals, 0–2 retrolaterals, 3 pairs of ventrals; basitarsus I with no dorsal macrosetae, 3 prolaterals, 0–3 retrolaterals, 3 pairs of ventrals plus 1 unpaired at tip; leg macrosetae in females usually shorter and more slender than those in male. Abdomen ovoid, hairy, drab in color, sometimes with black venter. Male palpus with prominent palea; terminal apophysis sickle-shaped and parallel to embolus; embolus long, slender, curved, resting on large tegular lobe; median apophysis triangular, transverse, with mesally directed spur (Figs. 10, 19). Epigynum hooded; hood cavities shallow; atrium distinct; median septum large, in shape of inverted T; copulatory openings at anterior margin of posterior transverse part of median septum (Figs. 11, 14); spermathecae large, bulbous, often with nodules (Figs. 9, 20).

Comments. Members of the genus *Geolycosa* are distinguished from those of the other lycosid genera by the following characteristics: body large; legs I and II often with distinct black areas; carapace distinctively elevated anterior to dorsal groove; terminal apophysis sickle-shaped; median apophysis with mesally directed spur; and life almost entirely restricted to soil burrows, which tend to be deep and vertical.

The genus *Geolycosa* is believed to be restricted to North America. Eighteen species have been identified, of which three occur in Canada. Wallace (1942) revised the genus, and McCrone (1963) further defined one of the southern species groups.

Key to species of *Geolycosa*

1.	Venter of abdomen black	***wrightii* (Emerton)** (p. 28)
	Venter of abdomen yellowish or buff-colored	2
2(1).	Male	3
	Female	4
3(2).	Median apophysis with depression at base of spur broad (Fig. 12)	***missouriensis* (Banks)** (p. 30)
	Median apophysis with depression at base of spur narrower (Fig. 12)	***domifex* (Hancock)** (p. 32)

4(2). Long setae on palpi and legs I and II usually amber in color. Spermathecae usually with single small nodule (Figs. 13, 16) .... ***missouriensis* (Banks)** (p. 30)

Long setae on palpi and legs I and II black or brownish. Spermathecae usually with 2 or more large nodules (Figs. 17, 20) .... ***domifex* (Hancock)** (p. 32)

Clé des espèces de *Geolycosa*

1. Partie ventrale de l'encéphalo de l'abdomen noire .... ***wrightii* (Emerton)** (p. 28)

Partie ventrale de l'encéphalo de l'abdomen jaunâtre ou fauve 2

2(1). Mâle 3

Femelle 4

3(2). Apophyse médiane avec dépression à la base d'un éperon large (fig. 12) .... ***missouriensis* (Banks)** (p. 30)

Apophyse médiane avec dépression à la base d'un éperon plus étroit (fig. 19) .... ***domifex* (Hancock)** (p. 32)

4(2). Soies longues sur les palpes et les pattes I et II, de couleur généralement ambrée. Spermathèques généralement avec une seule petite saillie (fig. 13, 16) .... ***missouriensis* (Banks)** (p. 30)

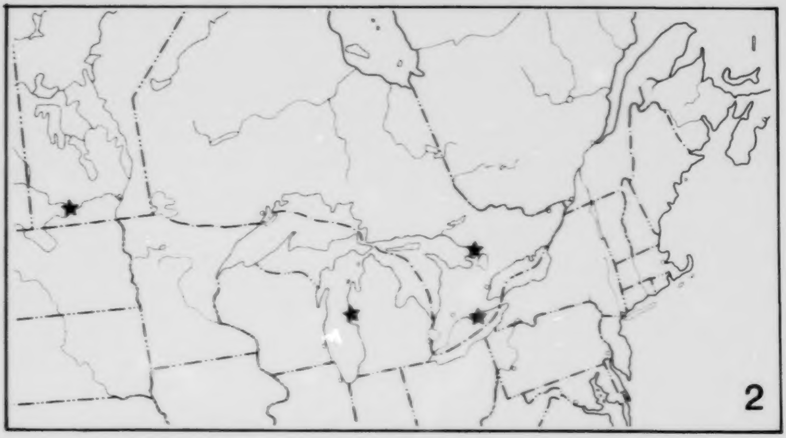
Soies longues sur les palpes et les pattes I et II, de couleur noire ou brunâtre. Spermathèques généralement avec deux saillies grosses ou plus (fig. 17, 20) .... ***domifex* (Hancock)** (p. 32)

Geolycosa wrightii (Emerton)

Figs. 9–11; Map 2

Lycosa wrightii Emerton, 1912:25, figs. 4–4*d* (pl. 4).
Geolycosa wrightii: Banks et al. 1932:30; Wallace 1942:29, figs. 7, 8, 43, 55, 56, 80, 91, 101, 111.

Male. Total length approximately 15 mm; carapace 7.05–7.58 mm long, 4.95–5.37 mm wide (3 specimens measured). Carapace dark red or reddish orange, with several alternating lighter and darker stripes radiating from dorsal groove. Chelicerae reddish or dark orange. Sternum pale orange. Legs orange or reddish orange;



Map 2. Collection localities of *Geolycosa wrightii*.

setae long, pale; distal segments of legs I and II darker ventrally. Abdomen yellowish to pale brown; heart mark long, tawny; venter black. Cymbium covered dorsally with brush of pale setae; median apophysis with depression at base of spur; depression shallow, broader than spur (Fig. 10).

Female. Total length 16.00 ± 1.13 mm; carapace 8.39 ± 0.57 mm long, 5.60 ± 0.45 mm wide (11 specimens measured). Coloration essentially as in male, but tibia and basitarsus I often extensively blackened; macrosetae on tibia and basitarsus I short and slender. Epigynum with median septum long, flat, rather slender; posterior transverse piece of median septum short, rounded at ends (Fig. 11). Spermathecae somewhat elongated, sinuous, extending anteriorly (Fig. 9).

Comments. Specimens of *G. wrightii* are distinguished by the following characteristics: abdominal venter black; broad, shallow depression at base of spur on median septum; and spermathecae elongate and sinuous.

Range. Southern Manitoba to the Great Lakes, south to South Dakota and Oklahoma. The species has also been reported in Colorado (Gwynne 1979).

Biology. Individuals of *G. wrightii* build burrows in bare inland sand dunes and beaches (Criddle 1917, Wallace 1942, Gwynne 1979). They make no turret and line their burrows thickly with silk (Criddle 1917). Gwynne and Watkiss (1975) describe methods of laboratory rearing. Wallace (1942) states that *G. wrightii* matures and mates in September and October, and eggs are laid the following May; females with young on their backs may be observed in the burrows during June and July.

Geolycosa missouriensis (Banks)

Figs. 12–14, 16; Map 3

Lycosa missouriensis Banks, 1895:206.
Geolycosa missouriensis: Banks et al. 1932:30, fig. 6; Wallace 1942:13, figs. 1, 2, 34, 50, 51, 76, 86, 97, 107.

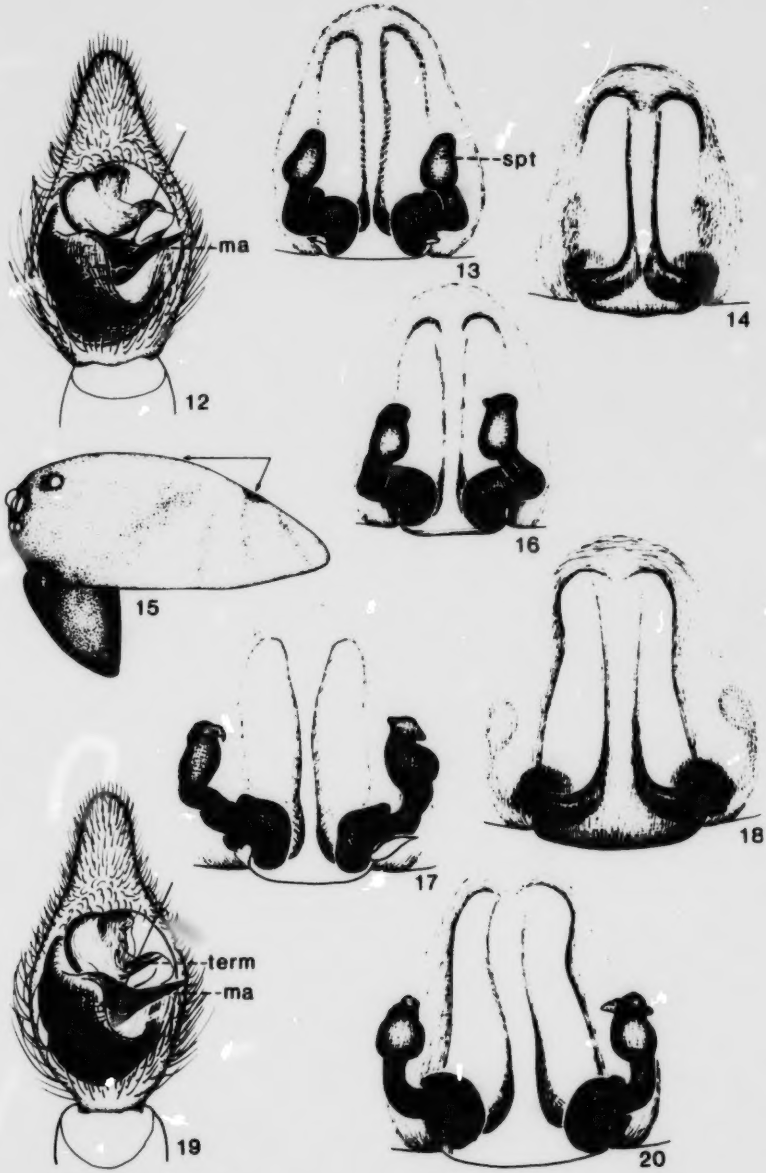
Male. Total length 14.94–16.32 mm; carapace 7.26–8.40 mm long, 4.95–6.00 mm wide (4 specimens measured). Carapace dark red (both in life and in alcohol), with few indistinct darker radiating marks. Chelicerae dark red, with long amber setae. Sternum orange. Legs dull reddish orange, usually with long amber setae; tibiae and basitarsi I and II partly or wholly darkened. Abdomen gray, sometimes with black longitudinal bands anteriorly at sides, sometimes with few indistinct chevrons; heart mark yellowish if present; venter yellowish. Cymbium covered dorsally with brush of setae; setae amber, erect or semierect; median apophysis with depression at base of spur; depression broad, shallow, wider than spur (Fig. 12).

Female. Total length 17.82 ± 2.28 mm; carapace 8.74 ± 0.80 mm long, 6.09 ± 0.59 mm wide (20 specimens measured). Coloration essentially as in male. Epigynum with median septum long, rather slender, somewhat convex at anterior end, sometimes tapered anteriorly (Fig. 14). Spermathecae large, bulbous, usually extending anteromesally, with few small prominences or none (Figs. 13, 16).

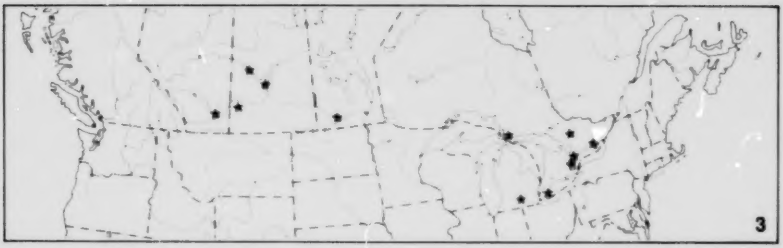
Comments. Specimens of *G. missouriensis* are distinguished by the following characteristics: median apophysis with broad depression at base of spur; long amber setae on chelicerae, legs I and II, and cymbium; and spermathecae usually extending anteromesally and bearing few, if any, small prominences. The red carapace of living specimens results from the sparseness of setae on that part of the body, in contrast to the gray carapace of living *G. domifex*, which apparently results from a covering of reflective setae.

Range. Southern Alberta to the Great Lakes, south to Arizona and Texas.

Biology. Individuals of *G. missouriensis* are found in sandy areas where plants provide surface litter, which the spiders



Figs. 12–20. Structures of *Geolycosa* spp. 12–14, 16, *G. missouriensis*. 12, palpus of male, ventral view; 13, 16, spermathecae, dorsal view; 14, epigynum, ventral view; 15, 17–20, *G. domifex*. 15, carapace, lateral view; 17, 20, spermathecae, dorsal view; 18, epigynum, ventral view; 19, palpus of male, ventral view. *ma*, median apophysis; *spt*, spermatheca; *term*, terminal apophysis.



Map 3. Collection localities of *Geolycosa missouriensis*.

incorporate into the turrets atop their burrows. Summer burrows are shallow, extending only 10–25 cm into the soil, but in late summer and autumn the burrows are deepened to as much as 170 cm and are closed with silk and sand before winter (Criddle 1917). The spiders mature and mate in autumn, and females lay eggs in the following May or June. Life history was reported by Kurata (1939). Sherman and Pax (1968) measured the heartbeat of this spider.

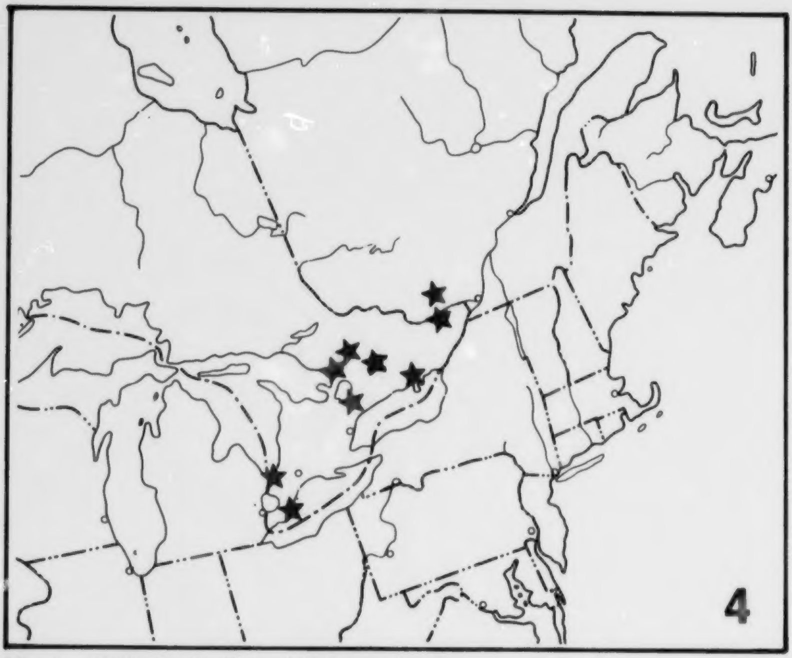
Geolycosa domifex (Hancock)

Figs. 15, 17–20; Map 3

Lycosa domifex Hancock, 1899*b*:168.
Geolycosa domifex: McQueen 1978:2037.

Male. Total length 14.42–16.74 mm; carapace 7.58–8.42 mm long, 5.26–6.00 mm wide (3 specimens measured). Carapace dark red in alcohol, gray in life owing to covering of reflective setae. Chelicerae reddish, with long pale setae. Sternum orange. Legs reddish orange; setae long, black or brownish; tibiae and basitarsi of legs I and II partly or wholly darkened. Abdomen gray; lateral anterior area often with black longitudinal bands; venter yellowish. Cymbium covered dorsally with setae; setae yellowish or brown, forming brush; median apophysis with depression at base of spur; depression narrow, approximately as wide as spur (Fig. 19).

Female. Total length 18.81 ± 2.14 mm; carapace 8.84 ± 0.68 mm long, 6.15 ± 0.50 mm wide (20 specimens measured). Coloration as in male. Epigynal median septum long, slender, flat (Fig. 18). Spermathecae large, usually extending anteriorly or anterolaterally, usually with 2 or more large prominences (Figs. 17, 20).



Map 4. Collection localities of *Geolycosa domifex*.

Comments. Specimens of *G. domifex* are distinguished by the following characteristics: median apophysis with narrow depression at base of spur; long yellowish or brown setae on chelicerae, legs I and II, and cymbium; and spermathecae usually extending anteriorly or anterolaterally and bearing 2 or more large prominences. The gray carapace of living individuals apparently results from a covering of reflective setae.

Range. Great Lakes region.

Biology. Individuals of *G. domifex*, like those of *G. missouriensis*, are found in sandy areas where plants provide surface litter, which the spiders mix with sand grains and silk in building turrets (Hancock 1899*a*, 1899*b*). The spiders mature and mate in autumn, and females lay eggs during the following spring. The offspring mature and reproduce in the fourth summer of life, and three separate cohorts occupy the same habitat with little gene exchange between them (McQueen 1978). McQueen (1979, 1980), McQueen et al. (1979), and McQueen and Culik (1981) give additional biological information.

Unpublished observations by the present authors on a male and four females suggest that courtship and copulation in this species are rather brief. Courtship, which lasted 2–3 min, consisted of a rapid alternate drumming of the male's palpi on the substrate; at the same time he rapidly vibrated legs I and II while holding them stiffly forward. The male mounted the female over her front, and copulation lasted about 5 min. There were 2–16 insertions of the embolus on a side before the male moved to the alternative side. This male palpated a female of *G. missouriensis* on three occasions but did not court her.

Genus *Hogna* Simon

Members of the worldwide genus *Hogna* vary from medium to large and often have thick bodies and strong legs. The strong-legged forms are burrowers. Scopulae are well developed and are used for climbing the inner walls of burrows, for catching and holding agile prey such as grasshoppers and crickets, and (in some species) for hopping through the aerial parts of grasses and shrubs. Some species are strikingly adorned with contrasting dark and light stripes. Habitats are diverse, and activity may be primarily nocturnal or primarily diurnal, depending on the species. Burrows are typically shallow and tortuous, and no species is known to remain in the burrow throughout life.

Description. Total length 10.0–24.0 mm. Carapace broad to rather slender, usually rather low, approximately uniform in height between dorsal groove and middle row of eyes; carapace usually with pale median and submarginal bands on dark background. Anterior row of eyes procurved, shorter than or equal to middle row in length; anterior median eyes evenly spaced in row; anterior median eyes larger than anterior lateral eyes. Chelicerae large, powerful, hairy; promargin of fang furrow usually with 3 teeth; retromargin with 3 teeth. Sternum usually orange or reddish brown, hairy. Legs usually long and stout, usually orange or reddish brown, rarely with dark rings; scopulae well developed; femur I with 3 dorsal macrosetae, 2 prolaterals, 3 retrolaterals; tibia I with 1 dorsal macroseta or none, 0–2 prolaterals, 0–2 retrolaterals, 3 pairs of ventrals; basitarsus I with no dorsal macrosetae, 0–3 prolaterals, 0–3 retrolaterals, 3 pairs of ventrals, and an unpaired ventral at tip. Abdomen ovoid, drably colored or with contrasting pale and dark longitudinal bands; anterior end of abdomen with brush of erect curved setae. Male palpus with tibia longer than wide, usually widest at tip, with stridulatory organ; cymbium with 2 or more terminal macrosetae; terminal apophysis sickle-shaped, often double, extending to tip of tegular lobe; embolus long, usually slender and tapered, usually arising in large arch and lying parallel to terminal apophysis on tegular lobe; tegular lobe large, ear-like, acting as conductor; median apophysis large, usually oblique, usually with stout spur near base (Figs. 23, 28). Epigynum with shallow or deep atrium; median septum in shape of inverted T; copulatory openings at anterior margin of transverse piece of median septum (Figs. 22, 25). Copulatory tubes rather short, thick, dark; spermathecae usually small, bulbous, sometimes with small nodules (Figs. 24, 27).

Comments. Members of the genus *Hogna* are distinguished from those of other lycosid genera by the following characterisitcs: carapace uniform in height; cymbium with 2 or more terminal macrosetae; embolus with large arch at base; terminal apophysis sickle-shaped and often double; and median apophysis with spur at base.

The genus *Hogna* needs revising. Some of the species that are currently placed in it may eventually be separated into two or more additional genera. We feel, however, that none of the North American species belong in the genus *Lycosa* (in the restricted European sense).

Probably more than 100 species of *Hogna* exist worldwide, of which perhaps one-half occur in North America. Seven occur or are thought to occur in Canada.

Key to species of *Hogna*

1. Abdomen (as well as carapace) with broad contrasting light and dark longitudinal bands (Figs. 21, 26) 2

Abdomen lacking contrasting light and dark bands (Figs. 29, 39) 5

2(1). Male 3

Female 4

3(2). Embolus broad, flat, truncate; median apophysis bowed at middle (Fig. 23) .... ***punctulata*** **(Hentz)** (p. 38)

Embolus slender and hair-like; median apophysis essentially straight (Fig. 28) .... ***rabida*** **(Walckenaer)** (p. 41)

4(2). Median septum with transverse piece extensively excavated (Fig. 22) .... ***punctulata*** **(Hentz)** (p. 38)

Median septum with transverse piece not excavated (Fig. 25) .... ***rabida*** **(Walckenaer)** (p. 41)

5(1). Male 6

Female 10

6(5). Carapace with pale median band broad, angular at sides, lacking pale submarginal bands (Fig. 29). Palea flat, lacking ridges (Fig. 31) .... ***frondicola*** **(Emerton)** (p. 42)

Carapace with pale median band more slender, parallel or curved at sides, or absent, and usually with pale submarginal bands (Figs. 39, 44). Palea with 1 or more sclerotized ridges (Fig. 43) 7

7(6). Median apophysis with spur at or near base (Figs. 38, 41, 47) 8

Median apophysis lacking spur (Fig. 33) .... ***carolinensis*** **(Walckenaer)** (p. 45)

8(7). Median apophysis with spur situated at base (Fig. 38) .... ***baltimoriana*** **(Keyserling)** (p. 47)

Median apophysis with spur situated short distance from base (Figs. 41, 47) 9

9(8). Median apophysis short, transverse; conductor (i.e., tegular lobe) extending only short distance distally (Fig. 41) .... ***aspersa*** **(Hentz)** (p. 49)

Median apophysis longer, more oblique; conductor extending far distally (Fig. 47) .... ***helluo*** **(Walckenaer)** (p. 51)

10(5). Median band broad, angular at sides. Carapace lacking pale submarginal bands (Fig. 29). Median septum with thin longitudinal piece and broad atrium (Fig. 30) .... ***frondicola*** **(Emerton)** (p. 42)

Median band more slender, parallel or curved at sides, or absent. Carapace usually with pale submarginal bands (Figs. 39, 44). Median septum with longitudinal piece thicker and atrium narrow (Figs. 35, 36, 40, 45) 11

11(10). Median septum with longitudinal piece strongly sinuous at sides (Fig. 36) .... ***baltimoriana*** **(Keyserling)** (p. 47)

Median septum with longitudinal piece smoothly curved or parallel at sides (Figs. 35, 40, 45) 12

12(11). Epigynum with hood; median septum rather flat (Figs. 40, 45) 13

Epigynum lacking hood; median septum strongly ridged (Fig. 35) .... ***carolinensis*** **(Walckenaer)** (p. 45)

13(12). Median septum with both longitudinal and transverse pieces thick (Fig. 40) .... ***aspersa*** **(Hentz)** (p. 49)

Median septum with both longitudinal and transverse pieces thinner (Fig. 45) .... ***helluo*** **(Walckenaer)** (p. 51)

Clé des espèces d'*Hogna*

1. Abdomen (tout comme la partie dorsale de l'encéphalo) avec bandes longitudinales de couleurs contrastantes, les unes pâles et les autres foncées (fig. 21, 26) 2

Abdomen sans bandes de couleurs contrastantes (fig. 29, 39) 5

2(1). Mâle 3

Femelle 4

3(2). Embolus large, aplati, tronqué; apophyse médiane courbée au milieu (fig. 23) .... ***punctulata*** **(Hentz)** (p. 38)

Embolus grêle et en forme de poil; apophyse médiane toujours droite (fig. 28) .... ***rabida*** **(Walckenaer)** (p. 41)

4(2). Septum médian avec pièce transversale largement excavée (fig. 22) .... ***punctulata*** **(Hentz)** (p. 38)

Septum médian avec pièce transversale non excavée (fig. 25) .... ***rabida*** **(Walckenaer)** (p. 41)

5(1). Mâle 6

Femelle 10

6(5). Partie dorsale de l'encéphalo avec bande médiane large, anguleuse sur les côtés, sans bandes submarginales pâles (fig. 29). Paléa aplatie, sans stries (fig. 31) .... ***frondicola*** **(Emerton)** (p. 42)

Partie dorsale de l'encéphalo avec bande médiane plus grêle, parallèle ou courbée sur les côtés, ou sans bande, et généralement avec des bandes submarginales pâles (fig. 39, 44). Paléa avec au moins une strie sclérotisée (fig. 43) 7

7(6). Apophyse médiane avec éperon à sa base ou près de sa base (fig. 38, 41, 47) 8

Apophyse médiane sans éperon (fig. 33) .... ***carolinensis*** **(Walckenaer)** (p. 45)

8(7). Apophyse médiane avec éperon situé à sa base (fig. 38) .... ***baltimoriana*** **(Keyserling)** (p. 47)

Apophyse médiane avec éperon situé près de sa base (fig. 41, 47) 9

9(8). Apophyse médiane courte, transversale; conducteur, c'est-à-dire lobe de la tegula, s'étendant sur une courte distance sur le dos (fig. 41) .... ***aspersa*** **(Hentz)** (p. 49)

Apophyse médiane plus longue, plus oblique; conducteur s'étendant loin sur le dos (fig. 47) .... ***helluo*** **(Walckenaer)** (p. 51)

10(5). Bande médiane large, côtés anguleux. Partie dorsale de l'encéphalo sans bandes submarginales pâles (fig. 29). Septum médian avec pièce longitudinale grêle et atrium large (fig. 30) .... ***frondicola*** **(Emerton)** (p. 42)

Bande médiane plus grêle, parallèle ou courbée sur les côtés, ou sans bande. Partie dorsale de l'encéphalo généralement avec bandes submarginales pâles (fig. 39, 44). Septum médian avec pièce longitudinale plus épaisse et atrium étroit (fig. 35, 36, 40, 45) 11

11(10). Septum médian avec pièce longitudinale fortement sinueuse sur les côtés (fig. 36) .... ***baltimoriana*** **(Keyserling)** (p. 47)

Septum médian avec pièce longitudinale courbée doucement ou parallèle aux côtés (fig. 35, 40, 45) 12

12(11). Épigyne avec capuchon; septum médian quelque peu aplati (fig. 40, 45) 13

Épigyne sans capuchon; septum médian fortement strié (fig. 35) .... ***carolinensis*** **(Walckenaer)** (p. 45)

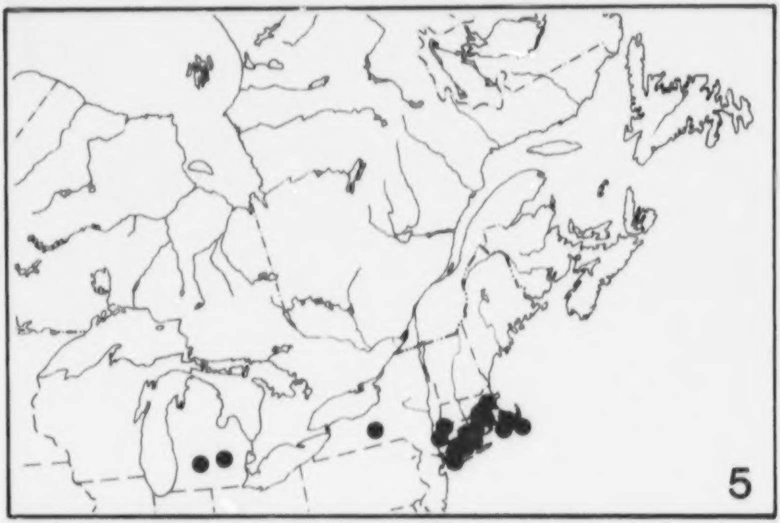
13(12). Septum médian ayant des pièces longitudinales et transversales épaisses (fig. 40) .... ***aspersa*** **(Hentz)** (p. 000)

Septum médian ayant des pièces longitudinales et transversales plus minces (fig. 45) .... ***helluo*** **(Walckenaer)** (p. 51)

Hogna punctulata (Hentz)

Figs. 21–24; Map 5

Lycosa punctulata Hentz, 1844:390, figs. 16, 17 (pl. 17); Chamberlin 1908:256, figs. 2, 3 (pl. 18); Kaston 1948:325, figs. 1080–1084 (pl. 55).

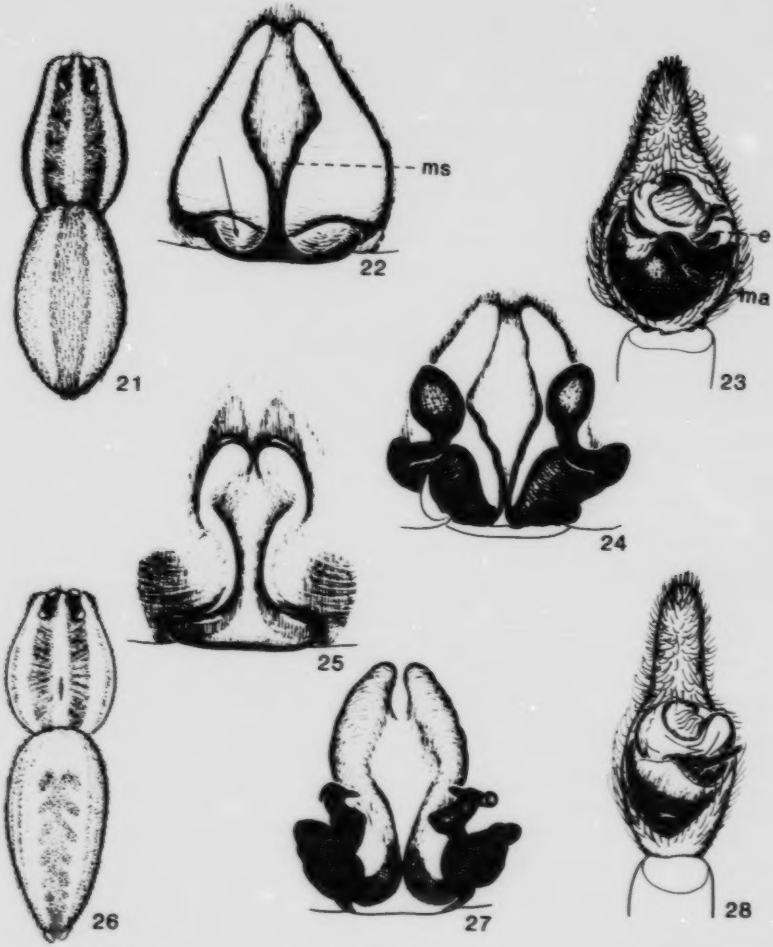


Map 5. Collection localities of *Hogna punctulata*.

Male. Total length 11.5–15.0 mm; carapace 4.95–6.53 mm long, 3.89–4.95 mm wide (five specimens measured). Carapace with orange median longitudinal band flanked by 2 dark brown bands; submarginal bands broad, orange. Sternum blackish; anterior sternum sometimes with darker median band. Chelicerae long, stout, hairy, dark red to black. Legs orange; distal segments reddish; coxae darkened ventrally like sternum; tibia IV dark at tip; scopulae dense. Abdomen banded; median band broad, black, flanked by paired broad pale bands; sides pale or grayish; venter black or with several large black patches. Cymbium with 10–12 stout macrosetae at tip; palea rugose, with sclerotized ridge; terminal apophysis sickle-shaped, rather broad and flat; tip of terminal apophysis rounded, twisted; embolus broad, flat, truncate; median apophysis broad, bowed at middle, with spur near base (Fig. 23).

Female. Total length 11.0–17.0 mm; carapace 5.26–6.11 mm long, 4.00–5.05 mm wide (3 specimens measured). Coloring as in male (Fig. 21). Epigynum hooded; hood cavities shallow and well separated; atrium shallow throughout its length; median septum with longitudinal part slender at base, expanded at middle, and somewhat narrowed anteriorly; transverse part extensively excavated (Fig. 22). Copulatory tubes short, thick, dark, touching at midline; spermathecae bulbous, smooth or with 1 to many small nodules (Fig. 24).

Comments. Specimens of *H. punctulata* are distinguished from those of other species of *Hogna* by the following characteristics:



Figs. 21–28. Structures of *Hogna* spp. 21–24, *H. punctulata*. 21, body of female, dorsal view; 22, epigynum; 23, palpus of male, ventral view; 24, spermathecae, dorsal view. 25–28, *H. rabida*. 25, epigynum, ventral view; 26, body of female, dorsal view; 27, spermathecae, dorsal view; 28, palpus of male, ventral view. *e*, embolus; *ma*, median apophysis; *ms*, median septum.

body with contrasting color bands; embolus broad, flat, and truncate; and transverse part of median septum excavated. This species has not previously been treated in the genus *Hogna*.

Range. Kansas and Michigan to Massachusetts, south to Texas and Florida.

Biology. The main habitat of *H. punctulata* is grassland, especially open weedy places. Adults are present from June to November, and females with egg sacs have been seen in July. The life history was studied in the laboratory by Eason and Whitcomb (1965).

Hogna rabida (Walckenaer)

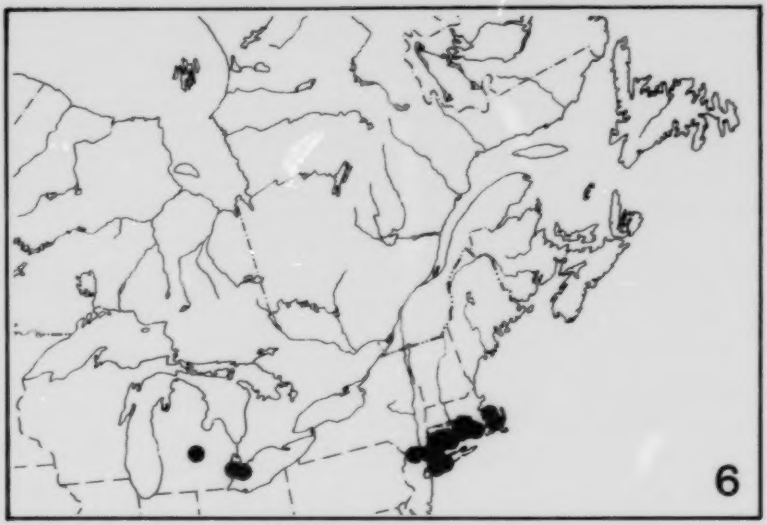
Figs. 25–28; Map 6

Lycosa rabida Walckenaer, 1837:320; Kaston 1948:324, figs. 1077–1079 (pl. 55), 2006 (pl. 108).

Male. Total length 10.84–15.15 mm; carapace 5.16–7.79 mm long, 3.26–5.89 mm wide (4 specimens measured). Carapace banded; median and submarginal bands wide, distinct, orange, alternating with 4 contrasting reddish brown bands; eye area black; median band pale, extending between eyes of middle row. Sternum pale orange. Chelicerae dark orange or dark reddish; anterior area sometimes with indistinct dark median band. Legs yellowish orange; femur tip, patella, tibia, and base of basitarsus I extensively blackened. Abdomen with contrasting lateral bands; median longitudinal band broad, grayish, breaking into chevrons posteriorly; venter yellowish orange, sometimes with small scattered brown spots. Cymbium with 10–20 stout macrosetae at tip; palea prominent, rugose, with sclerotized ridge; terminal apophysis sickle-shaped, in two parts, the basal one shorter and paler than the distal one; embolus long, slender, arising in large arch; median apophysis long, stout, somewhat oblique, with spur near base (Fig. 28).

Female. Total length 16.00–20.62 mm; carapace 6.32–9.47 mm long, 4.42–7.16 mm wide (7 specimens measured). Coloring as in male (Fig. 26) but leg I not blackened; scopulae more dense and more extensive than in male. Epigynum hooded; atrium deep anteriorly; median septum with longitudinal piece rather slender, somewhat widened anteriorly, ridge-like (Fig. 25). Copulatory tubes broad, dark, each with 2 lateral prominences (Fig. 27).

Comments. Specimens of *H. rabida* are distinguished by the following characteristics: body with contrasting color bands; median abdominal band breaking into chevrons posteriorly; venter pale; leg I with blackened segments in males; embolus slender; median apophysis long and oblique; epigynum with hood; median septum



Map 6. Collection localities of *Hogna rabida*.

with slender longitudinal piece; and copulatory tubes well separated. This species has not previously been referred to the genus *Hogna*.

Range. Kansas to southern Ontario and Massachusetts, south to Arizona and Florida.

Biology. Individuals of *H. rabida* are large, agile, and diurnal in habit. They inhabit tall grass and weeds, although some occur in open forests. Adult males are present in July and August and females from July to October. Egg sacs have been seen from mid August to mid September. Stratton (1985) documents recent biological work on this spider. Kaston (1936) and Rovner (1968) describe mating behavior.

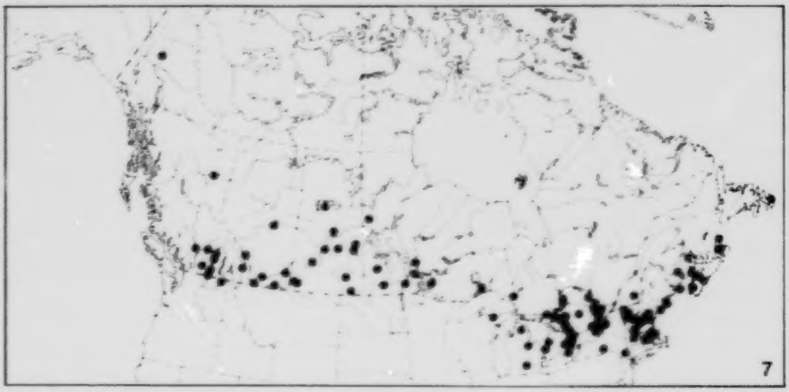
Hogna frondicola (Emerton)

Figs. 4, 29–32; Map 7

Lycosa frondicola Emerton, 1885:484, figs. 3, 3*a*, 3*b* (pl. 46); Chamberlin 1908:258, figs. 4, 5 (pl. 18); Kaston 1948:328, figs. 1110–1113 (pl. 57).

Lycosa nigriventris Emerton, 1885:488, fig. 5 (pl. 47).

Male. Total length 10.28 ± 1.10 mm; carapace 5.29 ± 0.57 mm long, 3.90 ± 0.62 mm wide (20 specimens measured). Carapace with

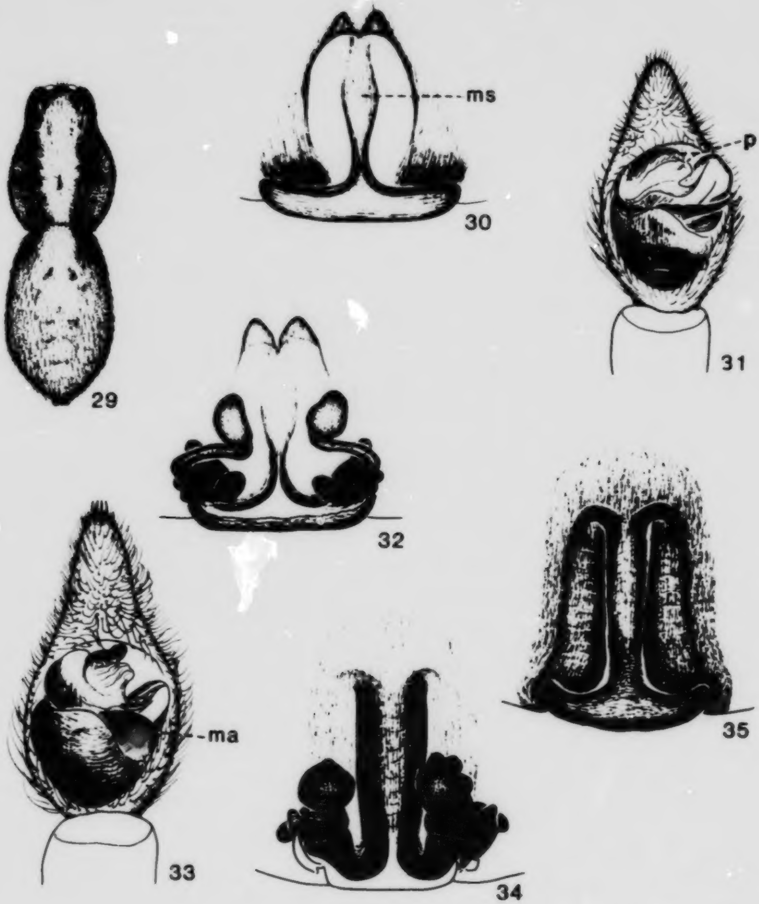


Map 7. Collection localities of *Hogna frondicola.*

lateral areas dark orange or reddish brown and with dark radiating marks; median band broad, pale, broadening angularly at sides behind posterior row of eyes, and sometimes enclosing paired dark spots or streaks (Fig. 29); submarginal bands absent. Sternum orange or reddish brown, suffused with black. Chelicerae dark reddish brown. Legs reddish brown or brownish orange; coxae suffused with black ventrally. Abdomen dull gray mesally; posterior area usually with a few dark transverse marks; anterolateral area with extensive black areas; heart mark indistinct; venter suffused with black. Cymbium with 2 or 3 slender macrosetae at tip; palea flattened, rugose, lacking sclerotized ridges; terminal apophysis short, sickle-shaped; embolus slender, not greatly arched at base; median apophysis oblique (Fig. 31).

Female. Total length 12.02 ± 1.31 mm; carapace 5.58 ± 0.48 mm long, 4.09 ± 0.41 mm wide (20 specimens measured). Coloring as in male, but abdomen sometimes lacking gray median band and abdominal venter usually less blackish. Epigynum hooded; atrium broad, shallow; median septum with longitudinal piece broadening anteriorly or at middle; transverse piece of median septum rather thin and curved (Fig. 30). Copulatory tubes short, slender, tortuous; spermathecae bulbous (Fig. 32).

Comments. Specimens of *H. frondicola* are distinguished by the following characteristics: carapace with angularly broadened, pale median band and no submarginal bands; sternum, venter, and coxae of legs blackened; palea flattened and lacking sclerotized ridges; embolus slender and not greatly arched at base; epigynum hooded; median septum with transverse piece thin and curved; and



Figs. 29–35. Structures of *Hogna* spp. 29–32, *H. frondicola*. 29, body of female, dorsal view; 30, epigynum, ventral view; 31, palpus of male, ventral view; 32, spermathecae, dorsal view. 33–35, *H. carolinensis*. 33, palpus of male, ventral view; 34, spermathecae, dorsal view; 35, epigynum, ventral view. *ma*, median apophysis; *p*, palea; *ms*, median septum.

copulatory tubes slender and tortuous. This species has not previously been referred to the genus *Hogna*.

Range. Yukon Territory to Newfoundland, south to California and Alabama.

Biology. Individuals of *H. frondicola* are usually found running on leaf litter in forests or meadows. Adults of both sexes mature in late July or early August. Mating takes place both in autumn and early in the spring, and egg sacs appear from May to mid July. Oviposition is in shallow cells in the soil (D.J. Buckle, personal communication, 1988). The life history in southeastern Ontario was described by Dondale (1977).

Hogna carolinensis (Walckenaer)

Figs. 33–35; Map 8

Lycosa tarentula carolinensis Walckenaer, 1837:285.

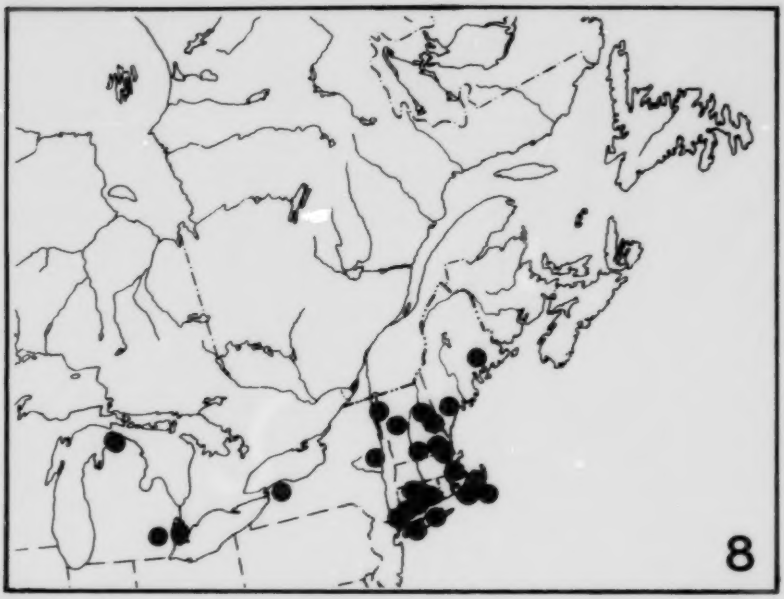
Lycosa carolinensis: Hentz 1842:230; Emerton 1885:486, fig. 1 (pl. 47); Chamberlin 1908:246, figs. 1, 2 (pl. 21); Kaston 1948:322, figs. 1055, 1056 (pl. 54), 1072 (pl. 55).

Hogna carolinensis: Roewer 1954:257.

Male. Total length 19.00 mm, carapace 9.99 mm long, 6.94 mm wide (1 specimen measured). Carapace dark reddish brown or brownish orange, with darker radiating lines; median and submarginal bands weakly developed; eye area black. Sternum usually black, sometimes dark reddish. Chelicerae black. Legs dark reddish orange, darker distally; tips of femora III and IV and bases and tips of tibiae III and IV black; coxae blackened ventrally. Abdomen grayish; heart mark broad, indistinct; venter dull black. Cymbium with 10 or more stout macrosetae at tip; palea prominent, rugose, with sclerotized ridge; terminal apophysis sickle-shaped, broad, curved, tapered near tip; embolus broad, tapered toward tip; median apophysis short, thick, tapered, lacking spur, thickened and raised at distal margin (Fig. 33).

Female. Total length 20.32–30.00 mm; carapace 10.00–12.32 mm long, 7.68–9.89 mm wide (3 specimens measured). Coloring as in male. Epigynum lacking hood; atrium reduced to narrow deep groove along sides of median septum; longitudinal piece of median septum slender, uniform in width, ridge-like (Fig. 35). Copulatory tubes short, thick, oblique, well separated, each with finger-like swelling on lateral side; spermathecae large, round, with few minute prominences (Fig. 34).

Comments. Specimens of *H. carolinensis* are distinguished by the following characteristics: body large; carapace with median and submarginal bands weakly developed; sternum, leg coxae, and abdominal venter black; terminal apophysis broad; embolus broad and tapered toward tip; median apophysis lacking spur; epigynum



Map 8. Collection localities of *Hogna carolinensis*.

lacking hood; atrium reduced to narrow groove; median septum uniform in width; copulatory tubes well separated; and spermathecae large and round.

Range. Oregon and Wyoming to southernmost Ontario and Maine, south to Baja California, Texas, and Florida.

Biology. Males mature in August and September, and females from August to the following summer. Mating occurs in autumn, and the mated females oviposit during the following May or June. The adults are nocturnal hunters, although individuals sometimes roam over fields in daylight. They build burrows up to 12 cm deep and top them with a turret made of grass blades and silk. Farley and Shear (1973) described courtship; Shook (1978) and Miller and Miller (1984) detailed burrowing behavior. Moeur and Eriksen (1972) investigated survival mechanisms in the Sonoran desert.

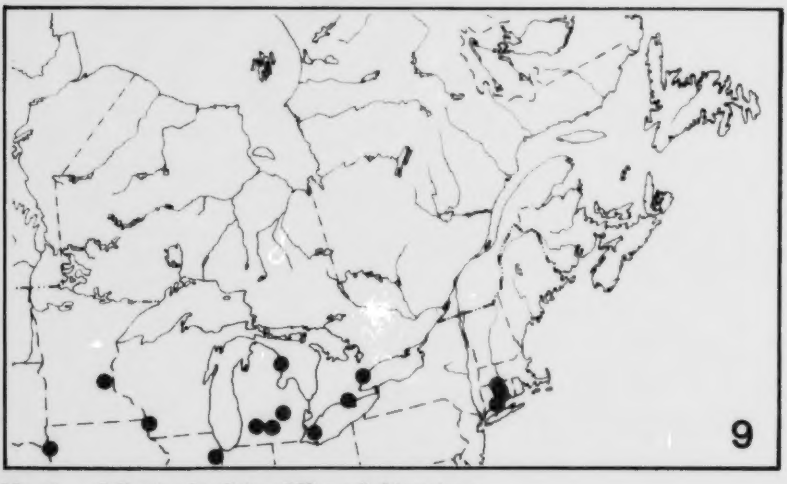
Hogna baltimoriana (Keyserling)

Figs. 36–38; Map 9

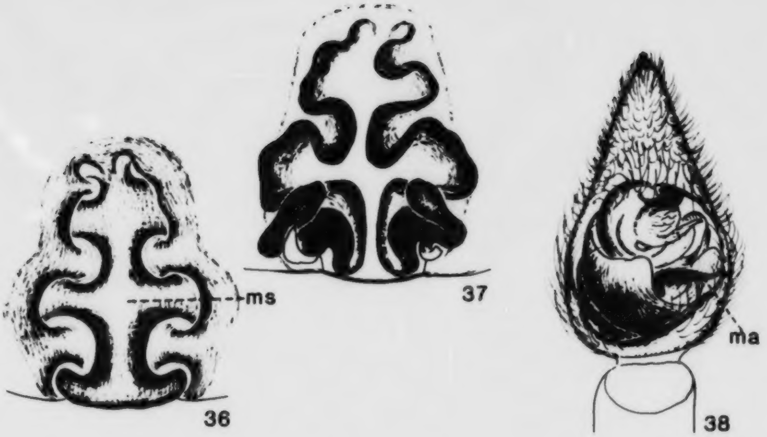
Tarentula baltimoriana Keyserling, 1877:632, fig. 16 (pl. 7).
Lycosa baltimoriana: Emerton 1909:203, fig. 1 (pl. 7); Kaston 1948:324, figs. 1073–1076 (pl. 55).

Male. Total length 14.84–15.57 mm; carapace 7.37–7.68 mm long, 5.68–6.00 mm wide (2 specimens measured). Carapace dark reddish brown, with alternating darker and lighter radiating lines; median or submarginal bands absent; setae white, in a slender band anteriorly at midline extending between eyes of middle row. Sternum black. Chelicerae dark reddish to black. Legs reddish orange, darker distally; patellae and coxae dark ventrally. Abdomen yellowish, with 5 or 6 chevrons or transverse marks posteriorly; heart mark brown, with irregular margins; venter black posterior to genital groove. Cymbium with 10–15 slender macrosetae at tip; palea rugose, with sclerotized ridge; terminal apophysis sickle-shaped, in 2 parts; basal part of terminal apophysis nearly as long as distal part and fused to embolus; embolus long, broad, flat, blunt at tip, forming large arch at base; median apophysis long, transverse, with spur at extreme base and with tip flattened and twisted (Fig. 38).

Female. Total length approximately 17.80 mm; carapace 8.21–9.05 mm long, 6.11–6.74 mm wide (2 specimens measured). Coloring as in male; heart mark larger, sometimes almost entirely brown or gray. Epigynum with small shallow hood; atrium deep;



Map 9. Collection localities of *Hogna baltimoriana*.



Figs. 36–38. Genitalia of *Hogna baltimoriana*. 36, epigynum, ventral view; 37, spermathecae, dorsal view; 38, palpus of male, ventral view. *ma*, median apophysis; *ms*, median septum.

longitudinal piece of median septum rather flat, with 1 or 2 abrupt expansions separated by constrictions (Fig. 36). Copulatory tubes thick and curved basally, more slender and curved distally; spermathecae bulbous (Fig. 37).

Comments. Specimens of *H. baltimoriana* are distinguished by the following characteristics: carapace lacking pale median and submarginal bands; sternum black; leg patellae dark on ventral surfaces; embolus broad, flat, and blunt; median apophysis with spur situated at extreme base; hood of epigynum small and shallow; and median septum with abrupt expansions. This species has not previously been referred to the genus *Hogna*.

Range. Minnesota to southern Ontario and Massachusetts, south to Arizona and Florida.

Biology. Mature males have been collected from September to November, and mature females from September to November and in April. A female was collected in the cellar of a house, but the usual habitat is not reported.

Hogna aspersa (Hentz)

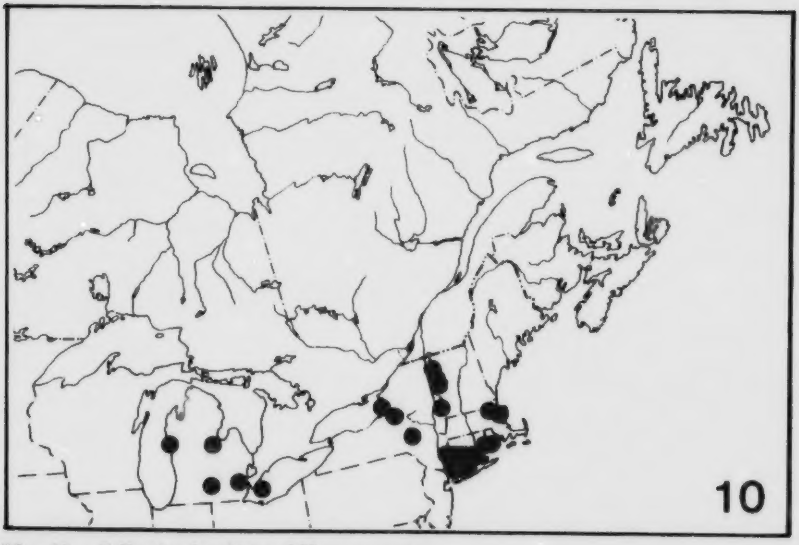
Figs. 39–42; Map 10

Lycosa aspersa Hentz, 1844:389, figs. 11, 12 (pl. 17); Chamberlin 1908:236, figs. 9 (pl. 9), 7, 8 (pl. 17); Kaston 1948:323, figs. 1057–1062 (pl. 54), 2065 (pl. 132).

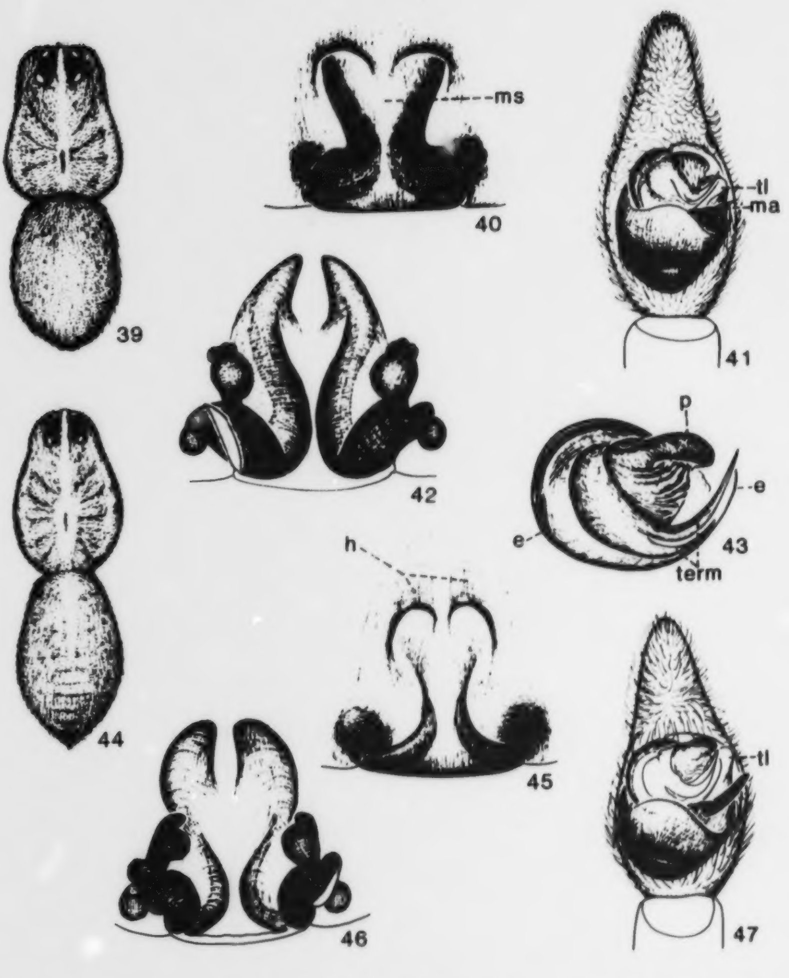
Lycosa vulpina Emerton, 1885:487, fig. 2 (pl. 47).

Male. Total length approximately 17.00 mm; carapace 9.16 mm long, 7.47 mm wide (1 specimen measured). Carapace reddish brown; radiating lines numerous, black, slender; median band pale, slender; submarginal bands usually present (Fig. 39). Sternum orange to black, sometimes with pair of indistinct darker bands anteriorly astride midline. Chelicerae orange to black. Legs orange, darker distally; coxae black ventrally; leg IV sometimes with dark ring at tip of tibia and at tip and middle of basitarsus. Abdomen pale gray to reddish, spotted or mottled with black; heart mark present or absent; venter yellowish orange, sometimes with several black spots. Cymbium with 10–20 stout macrosetae at tip; palea rugose, with sclerotized ridge; terminal apophysis sickle-shaped, in two parts; embolus long, fine; median apophysis short, slender, transverse (Fig. 41).

Female. Total length 15.57–23.06 mm; carapace 7.89–10.53 mm long, 6.21–9.16 mm wide (4 specimens measured). Coloring as in male, but femora sometimes with 3 or 4 faint dark rings. Epigynum



Map 10. Collection localities of *Hogna aspersa*.



Figs. 39–47. Structures of *Hogna* spp. 39–42, *H. aspersa*. 39, body of female, dorsal view; 40, epigynum, ventral view; 41, palpus of male, ventral view; 42, spermathecae, dorsal view. 43–47, *H. helluo*. 43, apical division of male palpus, ventral view; 44, body of female, dorsal view; 45, epigynum, ventral view; 46, spermathecae, dorsal view; 47, palpus of male, ventral view. *e*, embolus; *h*, hood; *ma*, median apophysis; *ms*, median septum; *p*, palea; *term*, terminal apophysis; *tl*, tegular lobe.

hooded; atrium deep; median septum with longitudinal part rather broad posteriorly (Fig. 40). Copulatory tubes short, thick, dark, well separated; spermathecae bulbous to somewhat bi-lobed, with rounded swelling at base (Fig. 42).

Comments. Specimens of *H. aspersa* are distinguished by the following characteristics: carapace with slender pale median and submarginal bands; venter yellowish orange and marked with pale spots; palea ridged; embolus slender and greatly arched at base; median apophysis short and transverse; conductor extending only short distance distally; epigynum hooded; and median septum thick. This species has not previously been referred to the genus *Hogna*.

Range. Wyoming to southern Ontario and Massachusetts, south to Texas and Florida.

Biology. Individuals of *H. aspersa* build burrows with turrets made of sand, straw, or twigs bound together with silk, but the spiders are sometimes found in silk-lined depressions beneath stones or logs. They live mainly in woodlands or at the edges of such habitats. Activity is mainly nocturnal. Adults appear and mate in September or October, and females oviposit during the following spring and summer. Overwintered females have been collected as late as August. Judd (1971) described a method of caging and feeding a large female of *H. aspersa* (possibly *H. helluo*) in London, Ont. He used a glass battery jar nearly filled with loose soil and fitted with a screened lid. The spider excavated a burrow beneath the edge of a board that had been placed on the soil surface. American cockroaches were supplied as food.

Hogna helluo (Walckenaer)

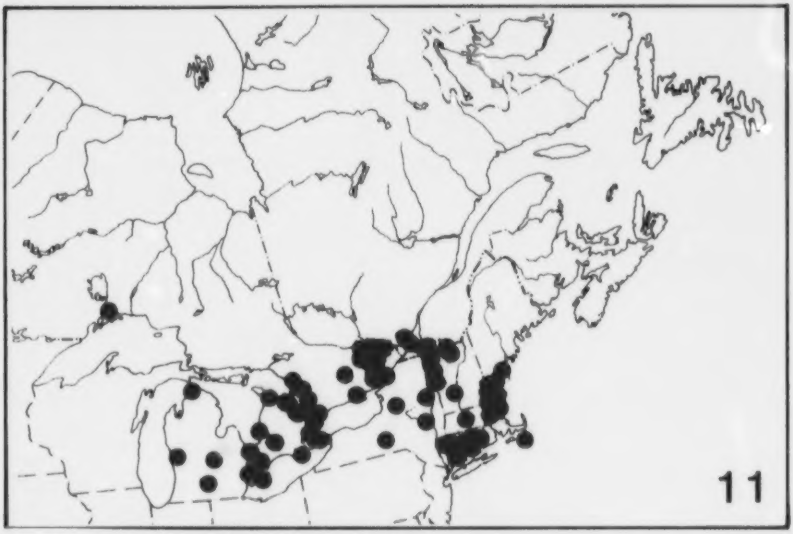
Figs. 43–47; Map 11

Lycosa helluo Walckenaer, 1837:337; Chamberlin 1908:226, figs. 1, 2 (pl. 17); Kaston 1948:327, figs. 1065, 1066 (pl. 54), 1090 (pl. 56), 1105 (pl. 57).

Lycosa nidicola Emerton, 1885:482, fig. 1–1*d* (pl. 46).

Hogna helluo: Roewer 1954:258.

Male. Total length 10.31 ± 0.94 mm; carapace 5.53 ± 0.50 mm long, 4.28 ± 0.42 mm wide (20 specimens measured). Carapace dark reddish brown, with darker radiating lines; median band slender, pale; submarginal bands slender to broad (Fig. 44); eye area black. Sternum reddish brown, suffused with black; anterior sternum with indistinct pale median band. Chelicerae dark reddish brown. Legs dark yellowish brown or brownish orange; coxae suffused with black ventrally. Abdomen dark gray; heart mark broad, dark, present or absent; venter dull yellow or grayish, sometimes with scattered small black spots. Cymbium with 1–7 stout macrosetae at tip; palea rugose, with ridges; terminal apophysis sickle-shaped, with 2 processes;



Map 11. Collection localities of *Hogna helluo*.

embolus long, fine, arising in large arch; median apophysis long, oblique; conductor extending distally nearly to distal margin of palea (Figs. 43, 47).

Female. Total length 17.87 ± 2.61 mm; carapace 8.36 ± 1.18 mm long, 6.42 ± 0.97 mm wide (20 specimens measured). Coloring as in male, but carapace and chelicerae often black. Legs sometimes nearly black and marked with several dark rings. Abdominal dorsum uniformly dark gray. Venter often uniformly black or marked with 3 dark longitudinal bands (Fig. 44). Epigynum hooded; atrium deep; longitudinal piece of median septum slender posteriorly (Fig. 45). Copulatory tubes short, thick, well separated; spermathecae bi-lobed, with rounded prominence at base (Fig. 46).

Comments. Specimens of *H. helluo* are distinguished by the following characteristics: carapace with slender pale median band; palea ridged; embolus slender and arched at base; median apophysis long and oblique; conductor extending distally nearly to distal margin of palea; epigynum hooded; median septum basally slender.

Range. Iowa to southern Ontario, Quebec, and Maine, south to Colorado, Texas, and Florida.

Biology. Individuals of *H. helluo* are usually found in moist fields, forests, and roadsides, or at the margins of marshes and bogs. Females build silk-lined shallow nest holes under stones and logs.

Mature males are found from May to September, and mature females are seen year round. Mating occurs in June, according to Kaston (1948). Kaston (1936) and Nappi (1965) described courtship and mating.

Genus *Schizocosa* Chamberlin

Spiders of the genus *Schizocosa* are of medium size and possess long strong legs and relatively keen sight. The body is carried high, and the spiders dart with great speed when pursuing prey or taking cover. Most inhabit grasslands, although a few live mainly in bogs or in deciduous woods. The females of some species make shallow nest-holes in the ground at egg-laying time (Fig. 3). Rovner (1975) described the stridulatory organ located at the junction of tibia and cymbium in the male palpus of three species. Stratton (1985) reviewed recent behavioral work on members of the genus *Schizocosa*, and Stratton and Uetz (1986) explored the genetic basis for courtship differences between two closely related species in Illinois.

Description. Total length 4.8–28.4 mm. Carapace rather high, uniform in height between dorsal groove and posterior row of eyes, strongly narrowed and steeply sloped at level of coxae I; lateral areas dark reddish brown to black; median band wide, distinct, pale; submarginal bands pale, distinct, usually present; setae dense, black or white (Fig. 83). Anterior row of eyes somewhat procurved, shorter than middle row; anterior median eyes equal to or somewhat larger than anterior lateral eyes. Chelicerae yellowish, orange, or darker; promargin with 3 teeth; retromargin with 3 teeth (rarely 2 or 4 on one chelicera or the other). Sternum variously colored. Legs moderately long and stout, hairy, yellow to orange or reddish brown; femora often with dark rings; scopulae moderately dense; trochanter tips with ventral notch; femur I with 3 dorsal macrosetae, 2 prolaterals together, near tip; tibia I with no dorsal macrosetae, 2 prolaterals, 2 retrolaterals, 3 pairs of ventrals; tibia I sometimes with brush of dark erect setae (Fig. 50, males only); basitarsus I with no dorsal macrosetae, 0–3 prolaterals, 0–3 retrolaterals; ventrals in 3 pairs plus an unpaired macroseta at tip. Abdomen ovoid, usually with 2 pale longitudinal bands that join and extend to tip, sometimes with chevrons or pairs of oblique dark streaks; heart mark long, distinct, dark, usually present. Cymbium usually with cluster of macrosetae at tip; palea sometimes with finger-like distal process; terminal apophysis small, scale-like, situated at base of intromittent part of embolus; embolus with short angulate intromittent part; conductor formed of larger conspicuous tegular lobe; median apophysis long, usually directed retrolaterodistally, with stout mesally directed spur near base (Fig. 85). Epigynum distinctly hooded; median septum strong, in form of inverted T; transverse part of median septum with lateral ends excavated, excised, or truncated; copulatory openings usually situated at sides of median septum (Fig. 48). Copulatory tubes thick, angled toward midline; spermathecae round or ovoid, smooth, rugose, or with small nodules (Fig. 49).

Comments. Members of the genus *Schizocosa* are distinguished from those of other lycosid genera by the following characteristics: intromittent part of the embolus short, angled; terminal apophysis small, scale-like, situated at the base of the intromittent part of the embolus; the epigynal median septum T-shaped; lateral ends of epigynal median septum excavated, excised, or truncated.

The genus *Schizocosa* is restricted to North America. Twenty-one species are known (Dondale and Redner, 1978*a*), of which 13 occur in Canada.

Key to species of *Schizocosa*

1. **Male** 2

Female 14

2(1). **Palea with distinct distal process (Figs. 51, 55, 59, 62). Venter lacking longitudinal black bands or areas** 3

Palea lacking distal process (Fig. 65). Venter sometimes with longitudinal black bands, extensive black areas, or entirely black 6

3(2). **Paleal process finger-like (Fig. 51). Tibia I with brush of erect black setae (Fig. 50)** .... ***ocreata* (Hentz) (p. 61)**

Paleal process short, pointed (Figs. 55, 59, 62). Tibia I lacking brush 4

4(3). **Intromittent part of embolus moderately long, sinuous (Fig. 55)** .... ***saltatrix* (Hentz) (p. 63)**

Intromittent part of embolus short, with single curve (Figs. 59, 62) 5

5(4) **Terminal apophysis extending far retrolaterally, concealing base of intromittent part of embolus (Fig. 59)** .... ***humilis* (Banks) (p. 65)**

Terminal apophysis extending only to base of intromittent part of embolus (Fig. 62) .... ***duplex* Chamberlin (p. 66)**

6(2). Tibia I with brush of erect black setae .... ***bilineata*** **(Emerton)** (p. 69)

Tibia I without brush of erect black setae 7

7(6). Palpal tibia wider than long (Fig. 69) .... ***crassipalpata*** **Roewer** (p. 72)

Palpal tibia longer than wide 8

8(7). Intromittent part of embolus thick except at tip, curved retrolaterally. Median apophysis making approximately 45° angle with longitudinal axis of genital bulb (Fig. 71) .... ***mimula*** **(Gertsch)** (p. 73)

Intromittent part of embolus slender and tapered throughout its length or represented by minute tapered point (Figs. 75, 80). Median apophysis making angle greater than 45° with longitudinal axis of bulb 9

9(8). Intromittent part of embolus long, arched; terminal apophysis present and well sclerotized (Figs. 80, 85) 10

Intromittent part of embolus minute, tapered, hardly longer than wide (Fig. 75); terminal apophysis absent .... ***minnesotensis*** **(Gertsch)** (p. 74)

10(9). Intromittent part of embolus arched toward midline of genital bulb in distal half (Fig. 80) .... ***retrorsa*** **(Banks)** (p. 77)

Intromittent part of embolus arched away from midline of genital bulb in distal half (Figs. 84, 88) 11

11(10). Median apophysis with strongly convex distal margin (Figs. 84, 85) .... ***avida*** **(Walckenaer)** (p. 78)

Median apophysis with somewhat convex or straight distal margin (Figs. 93, 97, 100) 12

12(11). Carapace length usually less than 3.60 mm. Intromittent part of embolus rather broad (Fig. 93) .... ***cespitum*** **Dondale & Redner** (p. 82)

Carapace length usually more than 3.60 mm. Intromittent part of embolus more slender (Figs. 85, 100) 13

13(12). Pale submarginal bands of carapace broken into series of 3 or 4 spots. Femur I usually black .... ***communis*** **(Emerton)** (p. 83)

Pale submarginal bands of carapace usually unbroken. Femur I with at most 1 black band along prolateral surface .... ***mccooki*** **(Montgomery)** (p. 85)

14(1). **Extremities of transverse piece of median septum with surface excavations one-half their length or more (Figs. 48, 53, 61) 15**

Extremities of transverse piece of median septum lacking surface excavations; tips excised or truncate (Figs. 72, 76, 77) 20

15(14). **Hood with single shallow cavity (Figs. 66, 68) 16**

Hood with paired deep cavities (Figs. 48, 53, 61) 17

16(15). **Median septum usually as wide as long (compare *a* and *b*, Fig. 68). Body generally dark. Submarginal bands of carapace narrow and unbroken. Sternum orange, suffused with black .... *crassipalpata* Roewer (p. 72)**

Median septum usually wider than long (Fig. 56). Body generally pale. Submarginal bands of carapace broad and broken. Sternum pale orange .... *bilineata* (Emerton) (p. 69)

17(15). **Longitudinal piece of median septum widest posteriorly (Fig. 48) .... *ocreata* (Hentz) (p. 61)**

Longitudinal piece of median septum widest anteriorly or parallel at sides (Figs. 53, 60, 61) 18

18(17). **Posterior margins of atrium arched and strongly sclerotized (Fig. 53) .... *saltatrix* (Hentz) (p. 63)**

Posterior margins of atrium neither arched nor strongly sclerotized 19

19(18). **Median septum more than 1.5 times as long as wide (compare *a* and *b*, Fig. 60). Spermathecae separated by less than their width (Fig. 58) .... *humilis* (Banks) (p. 65)**

Median septum less than 1.5 times as long as wide (Fig. 61). Spermathecae separated by more than their width (Figs. 63, 64) .... *duplex* Chamberlin (p. 66)

20(14). **Tips of transverse piece of median septum truncated (Fig. 77) .... *minnesotensis* (Gertsch) (p. 74)**

Tips of transverse piece of median septum rounded or excised (Figs.72, 76, 86) 21

21(20). **Copulatory openings deep, conspicuous, situated along lateral one-third of transverse piece of median septum (Figs. 72, 73) .... *mimula* (Gertsch) (p. 73)**

Copulatory openings neither deep nor conspicuous, situated at ends of transverse piece of median septum (Figs. 76, 86) 22

22(21). Carapace length approximately 4.00 mm. Venter usually entirely black .... ***cespitum* Dondale & Redner** (p. 82)

Carapace length more than 4.00 mm. Venter usually with pale and dark areas or entirely pale 23

23(22). Copulatory tubes with conspicuous prominence at lateral angle (Figs. 81, 82). Venter usually totally black, sometimes with small pale median spot .... ***retrorsa* (Banks)** (p. 77)

Copulatory tubes lacking conspicuous prominence at lateral angle. Venter usually with extensive pale areas or entirely pale 24

24(23). Pale submarginal bands of carapace usually broken into series of spots .... ***communis* (Emerton)** (p. 83)

Pale submarginal bands of carapace usually unbroken (Fig. 83) 25

25(24). One or both spermathecae usually angular (Figs. 89, 90). Spider occurring mainly east of eastern Michigan, Kansas, and central Texas (Map 18) ..... ***avida* (Walckenaer)** (p. 78)

Spermathecae usually bulbous or club-shaped (Figs. 99, 104). Spider occurring mainly west of eastern Michigan, Kansas, and central Texas (Map 20) ....
.... ***mccooki* (Montgomery)** (p. 85)

Clé des espèces de *Schizocosa*

1. Mâle 2

Femelle 14

2(1). Paléa avec processus distal net (fig. 51, 55, 59, 62). Partie ventrale de l'encéphalo de l'abdomen sans raies noires longitudinales et sans zones noires 3

Paléa sans processus distal (fig. 65). Partie ventrale de l'encéphalo de l'abdomen quelques fois avec raies noires longitudinales, avec zones noires étendues ou entièrement noires 6

3(2). Processus de la paléa digitiforme (fig. 51). Tibia I avec touffe de soies noires et dressées (fig. 50) ....
.... ***ocreata* (Hentz)** (p. 61)

Processus de la paléa court et pointu (fig. 55, 59, 62). Tibia I sans touffe 4

4(3). Partie terminale de l'embolus modérément longue, sinueuse (fig. 55) .... ***saltatrix* (Hentz)** (p. 63)

Partie terminale de l'embolus courte, avec une seule courbe (fig. 59, 62) 5

5(4). Apophyse terminale se prolongeant rétrolatéralement, cachant la base de la partie terminale de l'embolus (fig. 59) . ... ***humilis*** **(Banks)** (p. 65)

Apophyse terminale ne se prolongeant qu'à la base de la partie terminale de l'embolus (fig. 62) .... ***duplex*** **Chamberlin** (p. 66)

6(2). Tibia I avec touffe de soies noires et dressées .... ***bilineata*** **(Emerton)** (p. 69)

Tibia I sans touffe de soies noires et dressées 7

7(6). Tibia du palpe plus large que long (fig. 69) .... ***crassipalpata*** **Roewer** (p. 72)

Tibia du palpe plus long que large 8

8(7). Partie terminale de l'embolus épaisse sauf au bout, courbée rétrolatéralement. Apophyse médiane faisant un angle d'environ 45° avec l'axe longitudinal du bulbe génital (fig. 71) .... ***mimula*** **(Gertsch)** (p. 73)

Partie terminale de l'embolus grêle et effilée sur toute sa longueur ou représentée par une extrémité atténuée et fuselée (fig. 75, 80). Apophyse médiane faisant un angle de plus de 45° avec l'axe longitudinal du bulbe 9

9(8). Partie terminale de l'embolus longue, arquée; apophyse terminale présente et bien sclérotisée (fig. 80, 85) 10

Partie terminale de l'embolus atténuée et fuselée, pas beaucoup plus long que large (fig. 75); apophyse terminale absente .... ***minnesotensis*** **(Gertsch)** (p. 74)

10(9). Partie terminale de l'embolus arquée vers la ligne médiane du bulbe génital dans la moitié distale (fig. 80) .... ***retrorsa*** **(Banks)** (p. 77)

Partie terminale de l'embolus arquée, s'éloignant de la ligne médiane du bulbe génital dans la moitié distale (fig. 84, 88) 11

11(10). Apophyse médiane à marge distale fortement convexe (fig. 84, 85) .... ***avida*** **(Walckenaer)** (p. 78)

Apophyse médiane à marge distale peu convexe ou droite (fig. 93, 97, 100) 12

12(11). Longueur de la partie dorsale de l'encéphalo généralement moins que 3,60 mm. Partie terminale de l'embolus plutôt large (fig. 93) .... ***cespitum*** **Dondale & Redner** (p. 82)

Longueur de la partie dorsale de l'encéphalo généralement plus que 3,60 mm. Partie terminale de l'embolus plus grêle (fig. 85, 100) 13

13(12). Bandes submarginales de la partie dorsale de l'encéphalo subdivisées, formant une série de trois ou quatre taches. Fémur I généralement noir .... ***communis*** **(Emerton)** (p. 83)

Bandes submarginales pâles de la partie dorsale de l'encéphalo généralement entières. Fémur I avec au plus une bande noire le long de la surface prolatérale .... ***mccooki*** **(Montgomery)** (p. 85)

14(1). Extrémités de la pièce transversale du septum médian avec excavations superficielles de la moitié ou plus de leur longueur (fig. 48, 53, 61) 15

Extrémités de la pièce transversale du septum médian sans excavations superficielles; bouts découpés ou tronqués (fig. 72, 76, 77) 20

15(14). Capuchon de l'épigyne avec une seule cavité peu profonde (fig. 66, 68) 16

Capuchon de l'épigyne avec deux cavités profondes (fig. 48, 53, 61) 17

16(15). Septum médian généralement aussi large que long (comparer *a* et *b*, fig. 68). Corps généralement foncé: bandes submarginales de la partie dorsale de l'encéphalo étroites et entières; sternum orangé, envahi par le noir .... ***crassipalpata*** **Roewer** (p. 72)

Septum médian généralement plus large que long (fig. 66). Corps généralement pâle; bandes submarginales de la partie dorsale de l'encéphalo larges et entières. Sternum orangé pâle .... ***bilineata*** **(Emerton)** (p. 69)

17(15). Pièce longitudinale du septum médian atteignant sa largeur maximale postérieurement (fig. 48) .... ***ocreata*** **(Hentz)** (p. 61)

Pièce longitudinale du septum médian atteignant sa largeur maximale antérieurement ou parallèle latéralement (fig. 53, 60, 61) 18

18(17). Marges postérieures de l'atrium arquées, fortement sclérotisées (fig. 53) .... ***saltatrix*** **(Hentz)** (p. 63)

Marges postérieures de l'atrium ni arquées ni fortement sclérotisées 19

19(18). Septum médian plus de 1,5 fois plus long que large (comparer *a*, et *b*, fig. 60). Spermathèques séparées par une distance moindre que leur largeur (fig. 58) .... ***humilis* (Banks)** (p. 65)

Septum médian moins de 1,5 fois plus long que large (fig. 61). Spermathèques séparées parune distance supérieure à leur largeur (fig. 63, 64) .... ***duplex* Chamberlin** (p. 66)

20(14). Extrémités de la pièce transversale du septum médian tronquées (fig. 77) .... ***minnesotensis* (Gertsch)** (p. 74)

Extrémités de la pièce transversale du septum médian arrondies ou découpées (fig. 72, 76, 86) 21

21(20). Ouvertures copulatoires profondes, distinctes, situées le long du tiers latéral de la pièce transversale du septum médian (fig. 72, 73) .... ***mimula* (Gertsch)** (p. 73)

Ouvertures copulatoires ni profondes ni distinctes, situées aux extrémités de la pièce transversale du septum médian (fig. 76, 86) 22

22(21). Longueur de la partie dorsale de l'encéphalo d'environ 4,00 mm. Partie dorsale de l'abdomen généralement entièrement noire .... ***cespitum* Dondale & Redner** (p. 82)

Longueur de la partie dorsale de l'encéphalo de plus que 4,00 mm. partie dorsale de généralement pourvue d'étendues pâles et foncées, ou entièrement pâles 23

23(22). Tubes copulatoires avec renflement distinct à l'angle latéral (fig. 81, 82). Partie ventrale de l'abdomen en général entièrement noire, parfais avec petite tache médiane pâle .... ***retrorsa* (Banks)** (p. 77)

Tubes copulatoires sans renflement visible à l'angle latéral. Partie ventrale de l'abdomen en général pourvue de grandes étendues pâles ou entièrement pâles 24

24(23). Bandes submarginales pâles de la partie dorsale de l'encéphalo généralement subdivisées en séries de taches .... ***communis* (Emerton)** (p. 83)

Bandes submarginales pâles de la partie dorsale de l'encéphalo généralement entières (fig. 83) 25

25(24). Une ou les deux spermathèques généralement anguleuses (fig. 89, 90). Araignée se rencontrant dans la partie est de l'est du Michigan, au Kansas et dans la région centrale du Texas (carte 18) .... ***avida* (Walckenaer)** (p. 78)

Spermathèques généralement bulbeuses ou en forme de massue (fig. 99, 104). Araignée se trouvant dans la partie ouest de l'est du Michigan, au Kansas et au Texas central (carte 20) .... ***mccooki* (Montgomery)** (p. 85)

Schizocosa ocreata (Hentz)

Figs. 48–52; Map 12

Lycosa ocreata **Hentz, 1844:391, fig. 5 (pl. 18); Emerton 1885:491, figs. 6, *6a*, *6b* (pl. 48).**

Lycosa rufa **Keyserling, 1877:613, fig. 2 (pl. 7).**

Lycosa charonoides **Montgomery, 1902:544, fig. 8 (pl. 29).**

Lycosa stonei **Montgomery, 1902:546, figs. 9, 10 (pl. 29).**

Lycosa solivaga **Montgomery, 1902:574, fig. 39 (pl. 30).**

Schizocosa ocreata**: Chamberlin 1904*a*:176; 1908:212, figs. 1, 5 (pl. 16); Dondale and Redner 1978*a*:150, figs. 1, 5, 36–38.**

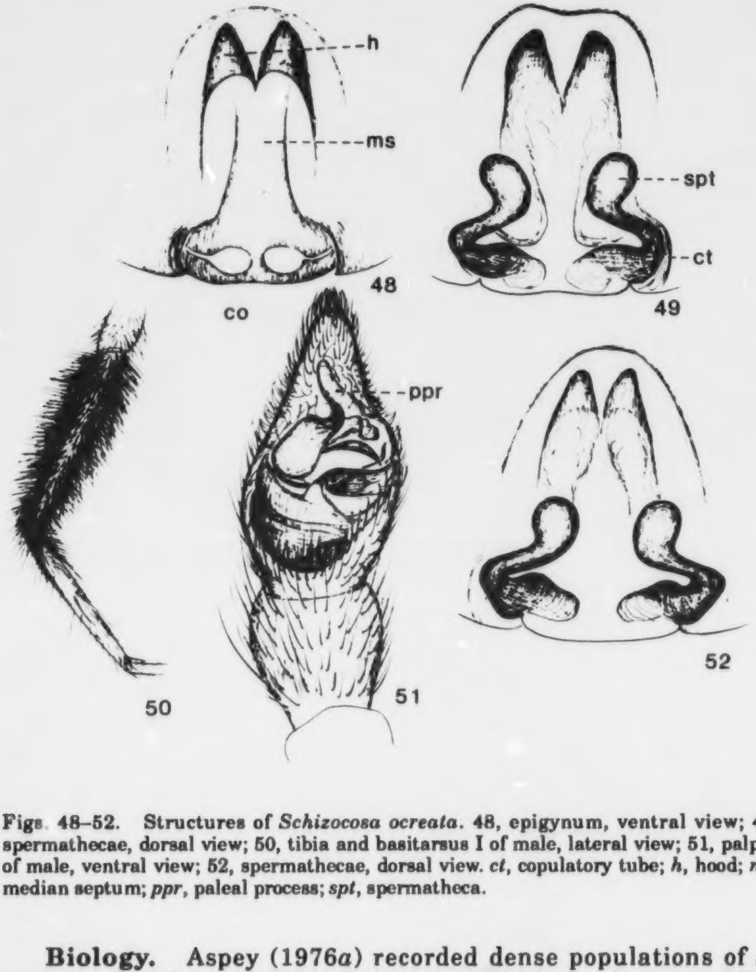
Schizocosa crassipes**: Kaston 1948:314, figs. 1017 (pl. 51), 1030, 1031 (pl. 52).**

Male. Total length 5.7–8.3 mm; carapace 3.65 ± 0.43 mm long, 2.78 ± 0.34 mm wide (20 specimens measured). Carapace with several black streaks; lateral areas dark reddish brown; submarginal bands pale, indistinct, or absent. Chelicerae dark reddish brown. Sternum reddish orange. Legs reddish brown; femora sometimes ringed with black; leg I darkest, with brush of erect black setae on tibia and usually on basal half of basitarsus (Fig. 50). Abdomen black anteriorly at sides, rarely with dark chevrons posteriorly; heart mark indistinct; venter dull red, sometimes with small black spots. Cymbium with approximately 10 stout macrosetae at tip; terminal apophysis with thickened margin, extending to and concealing base of intromittent part of embolus; intromittent part of embolus slender, pointed, nearly straight; tip of embolus with ventral hook; median apophysis undulating, with distal margin convex; palea with long finger-like process (Fig. 51).

Female. Total length 7.3–10.4 mm; carapace 4.00 ± 0.43 mm long, 3.02 ± 0.31 mm wide (20 specimens measured). Coloration essentially as in male but leg I lacking black brush. Epigynum hooded; hood cavities paired, deep; atrium moderately deep; median septum with longitudinal piece widest posteriorly; transverse piece of median septum having large surface excavations nearly meeting at midline (Fig. 48). Spermathecae ovoid, smooth, separated by approximately twice their width (Figs. 49, 52).

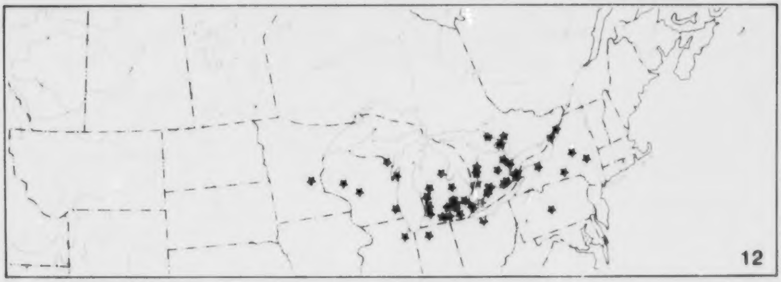
Comments. Specimens of *S. ocreata* are distinguished by the long finger-like paleal process, by the possession of a tibial brush in males, by the large surface excavations that nearly meet at the midline of the median septum, and by the lack of black areas on the venter.

Range. Mexico to Florida, north to South Dakota, southern Ontario, and Massachusetts.



Figs. 48–52. Structures of *Schizocosa ocreata*. 48, epigynum, ventral view; 49, spermathecae, dorsal view; 50, tibia and basitarsus I of male, lateral view; 51, palpus of male, ventral view; 52, spermathecae, dorsal view. *ct*, copulatory tube; *h*, hood; *ms*, median septum; *ppr*, paleal process; *spt*, spermatheca.

Biology. Aspey (1976*a*) recorded dense populations of *S. ocreata*, which he reported as *S. crassipes* (Walckenaer), among fallen leaves at the edge of a deciduous forest in Ohio. Cady (1983) and Cady et al. (1980) showed that individuals are also found in abundance within the forest. Aspey (1975*a*, 1975*b*, 1976*b*) reported on aspects of nonsexual behavior. Kaston (1936), Uetz and Denterlein (1979), and Stratton and Uetz (1981, 1983, 1986) described in detail courtship behavior, including the sounds produced. Rovner (1975) described the male stridulatory organ. Higashi and Rovner (1975) reported the survival of young while the latter are riding the mother's back. Peck and Whitcomb (1978) gave June and July as the maturity time for males and July and August for females.



Map 12. Collection localities of *Schizocosa ocreata*.

Schizocosa saltatrix (Hentz)

Figs. 53–57; Map 13

Lycosa saltatrix Hentz, 1844:387, fig. 7 (pl. 17).

Lycosa venustula Hentz, 1844:392, figs. 6, 7 (pl. 18).

Pardosa gracilis Banks, 1892:70, figs. 43, 50 (pl. 1).

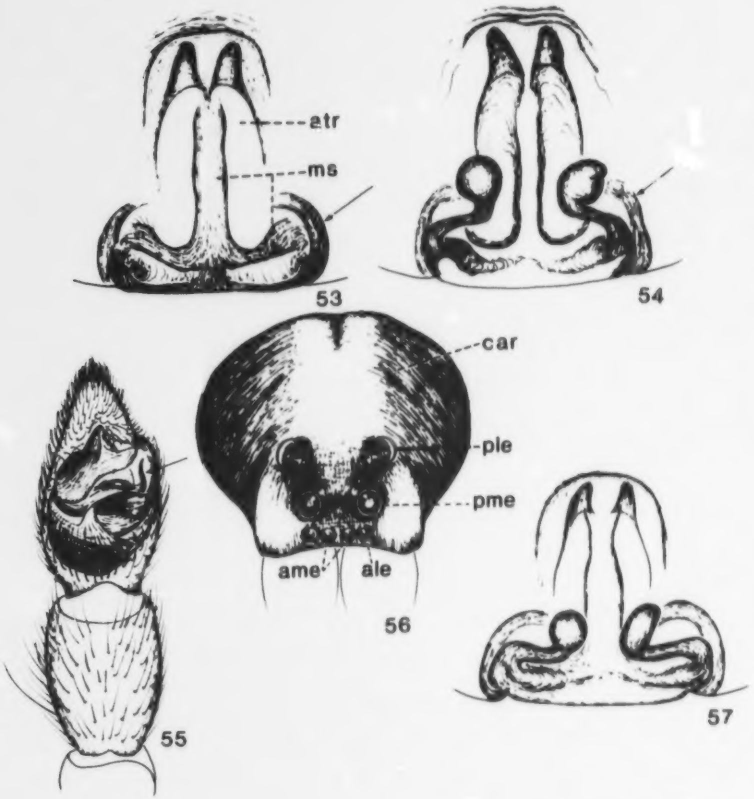
Lycosa relucens Montgomery, 1902:542, figs. 5, 6 (pl. 29); Emerton 1909: 206, figs. 1, 1*a*, 1*b* (pl. 6).

Lycosa verisimilis Montgomery, 1902:548, figs. 11, 12 (pl. 29).

Schizocosa saltatrix: Chamberlin 1908:215, fig. 2 (pl. 16); Kaston 1948:315, figs. 1018, 1019 (pl. 51), 1032 (pl. 52); Dondale and Redner 1978*a*:153, figs. 4, 39–41, 88.

Male. Total length 6.5–8.2 mm; carapace 3.95 ± 0.20 mm long, 3.03 ± 0.18 mm wide (20 specimens measured). Carapace with lateral areas dark reddish brown; submarginal bands slender, usually unbroken. Chelicerae dark reddish brown. Sternum reddish brown. Legs dark reddish brown, suffused with black; femora with up to 4 dark rings; tibial brush absent. Cymbium with 14–20 terminal macrosetae; terminal apophysis thin, well sclerotized, extending to base of intromittent part of embolus; intromittent part of embolus moderately long and thick, pointed, somewhat sinuous; median apophysis with distal margin convex; palea with short pointed process (Fig. 55).

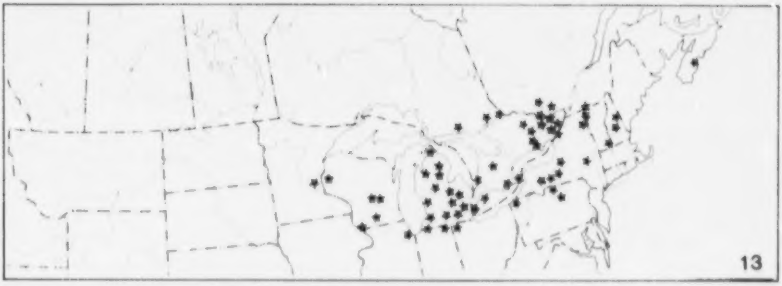
Female. Total length 7.0–11.8 mm; carapace 4.27 ± 0.38 mm long, 3.23 ± 0.27 mm wide (20 specimens measured). Coloration essentially as in male. Epigynum hooded; hood with paired cavities; atrium moderately deep; median septum with longitudinal piece parallel at sides; transverse piece of median septum curved, deeply excavated for two-thirds its length (Fig. 53). Spermathecae round or ovoid, separated by approximately their width (Figs. 54, 57).



Figs. 53–57. Structures of *Schizocosa saltatrix*. 53, epigynum, ventral view; 54, 57, spermathecae, dorsal view; 55, palpus of male, ventral view; 56, carapace, anterodorsal view. *ale*, anterior lateral eyes; *ame*, anterior median eyes; *atr*, atrium; *car*, carapace; *ms*, median septum; *ple*, posterior lateral eyes; *pme*, posterior median eyes.

Comments. Specimens of *S. saltatrix* are distinguished by the following characteristics: paleal process short and pointed; intromittent part of embolus moderately long and sinuous; tibia I of males lacking brush; posterior margins of atrium arched and strongly sclerotized; and venter lacking black areas.

Range. Colorado, New Mexico, and northern Mexico to northern Florida, north to Minnesota, Ontario, Quebec, and Nova Scotia.



Map 13. Collection localities of *Schizocosa saltatrix*.

Biology. Individuals of *S. saltatrix* inhabit deciduous forests, and adults are present from March to August. Rovner (1974) and Rovner and Wright (1975) reported on male sexual behavior. Higashi and Rovner (1975) estimated the survival of the young while the latter were riding the mother's back. Rovner (1975) discussed the function of the male stridulatory apparatus.

Schizocosa humilis (Banks)

Figs. 58–60; Map 14

Lycosa humilis Banks, 1892:65, fig. 36 (pl. 3).

Schizocosa humilis: Chamberlin 1904*a*:176; Dondale and Redner 1978*a*:154, figs. 7, 45, 46.

Lycosa episima Chamberlin, 1924:30, fig. 46 (pl. 6).

Male. Total length 5.3–6.6 mm; carapace 3.14 ± 0.20 mm long, 2.24 ± 0.16 mm wide (20 specimens measured). Carapace with lateral areas dark reddish brown and with a few black streaks; submarginal bands wide, unbroken; midstripe dark, slender, in pale area anterior to dorsal groove. Chelicerae reddish brown. Sternum reddish brown, with yellow midstripe. Legs reddish brown or yellowish brown to nearly black; femora sometimes with black rings; tibia I lacking brush. Abdomen reddish brown or orangish brown laterally, usually with heart mark and sometimes with dark chevrons; venter dull yellow, with row of dark spots along side margins. Cymbium with approximately 15 terminal macrosetae; terminal apophysis thin, broad, blunt at tip, and extending over and concealing base of intromittent part of embolus; intromittent part of embolus short, nearly straight, minutely bifid at tip; distal margin of median apophysis concave or straight; palea with short blunt process (Fig. 59).

Female. Total length 5.6–7.8 mm; carapace 3.50 ± 0.18 mm long, 2.45 ± 0.14 mm wide (20 specimens measured). Coloration essentially as in male. Epigynum hooded; hood with paired cavities; atrium moderately deep; median septum with longitudinal piece widened at middle and with surface of transverse piece excavated two-thirds its length (Fig. 60). Spermathecae rather large, round, separated by approximately one-half their width (Fig. 58).

Comments. Specimens of *S. humilis* are distinguished by the following characteristics: paleal process short; intromittent part of embolus nearly straight and minutely bifid; base of intromittent part of embolus concealed by thin blunt terminal apophysis; legs I of male lacking tibial brush; hood cavities paired; longitudinal piece of median septum widened at mid length and transverse piece excavated for two-thirds its length; and spermathecae large, round, and separated by approximately one-half their width.

Range. Arkansas to Florida, north to Ontario and New Brunswick.

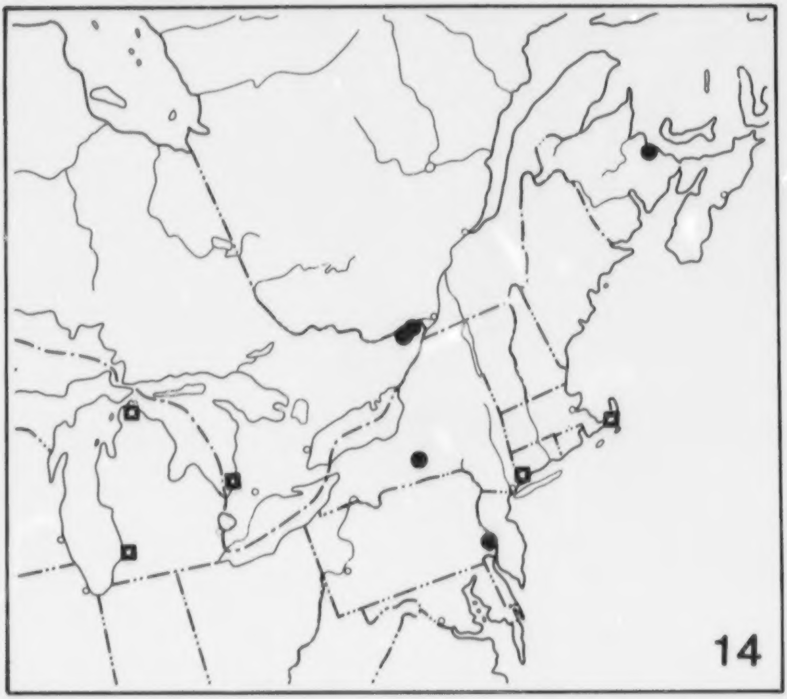
Biology. Specimens of *S. humilis* have been collected by pitfall traps in marshes and sphagnum bogs.

Schizocosa duplex Chamberlin

Figs. 61–64; Map 14

Schizocosa duplex Chamberlin, 1925*b*:231; Dondale and Redner 1978*a*:156, figs. 6, 42–44.

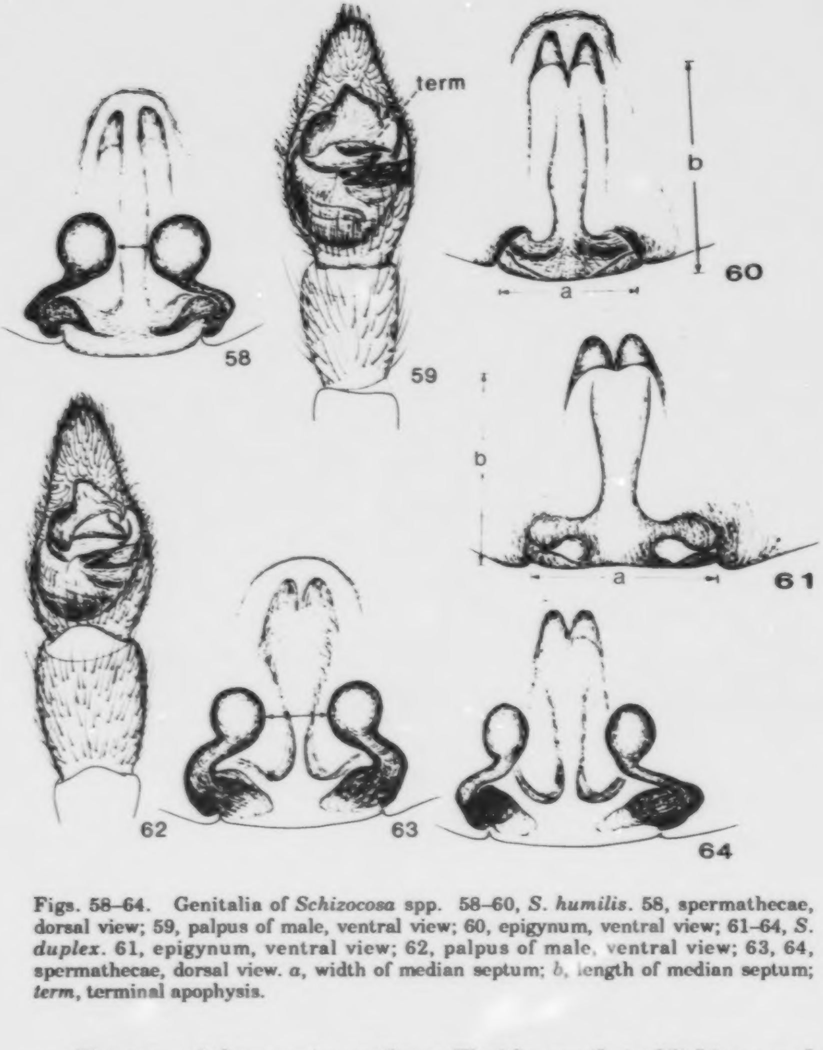
Male. Total length 5.5–7.1 mm; carapace 3.29 ± 0.22 mm long, 2.45 ± 0.18 mm wide (20 specimens measured). Carapace with a few black streaks; lateral areas dark reddish brown; submarginal bands short, indistinct. Chelicerae reddish brown. Sternum reddish brown. Legs reddish brown; femora sometimes with dark rings; tibial brush absent. Abdomen with heart mark, usually with chevrons; venter reddish brown or dull red. Cymbium with 10–12 terminal macrosetae; terminal apophysis broad, thin, pointed, extending to base of but not concealing intromittent part of embolus; margins of terminal apophysis thickened; embolus short, curved; median apophysis rugose, with convex distal margin; palea with short process (Fig. 62).



Map 14. Collection localities of *Schizocosa humilis* (●) and *S. duplex* (▫).

Female. Total length 6.9–8.5 mm; carapace 3.50 ± 0.18 mm long, 2.57 ± 0.15 mm wide (20 specimens measured). Coloration essentially as in male. Epigynum hooded; hood cavities paired; median septum with longitudinal piece widest anteriorly; transverse piece of median septum expanded at ends and excavated for two-thirds its length (Fig. 61). Spermathecae rounded, separated by approximately their width (Figs. 63, 64).

Comments. Specimens of *S. duplex* are distinguished by the following characteristics: paleal process short; intromittent part of embolus short and curved; terminal apophysis short and not concealing base of intromittent part of embolus; leg I of male lacking tibial brush; hood with paired cavities; median septum with longitudinal piece wide anteriorly; transverse piece of median septum expanded at ends and excavated for two-thirds its length; and spermathecae rounded and well separated.



Figs. 58–64. Genitalia of *Schizocosa* spp. 58–60, *S. humilis*. 58, spermathecae, dorsal view; 59, palpus of male, ventral view; 60, epigynum, ventral view; 61–64, *S. duplex*. 61, epigynum, ventral view; 62, palpus of male, ventral view; 63, 64, spermathecae, dorsal view. *a*, width of median septum; *b*, length of median septum; *term*, terminal apophysis.

Range. Arkansas to northern Florida, north to Michigan and Massachusetts.

Biology. Specimens of *S. duplex* have been collected in forests of oak and pitch pine on Cape Cod.

Schizocosa bilineata (Emerton)

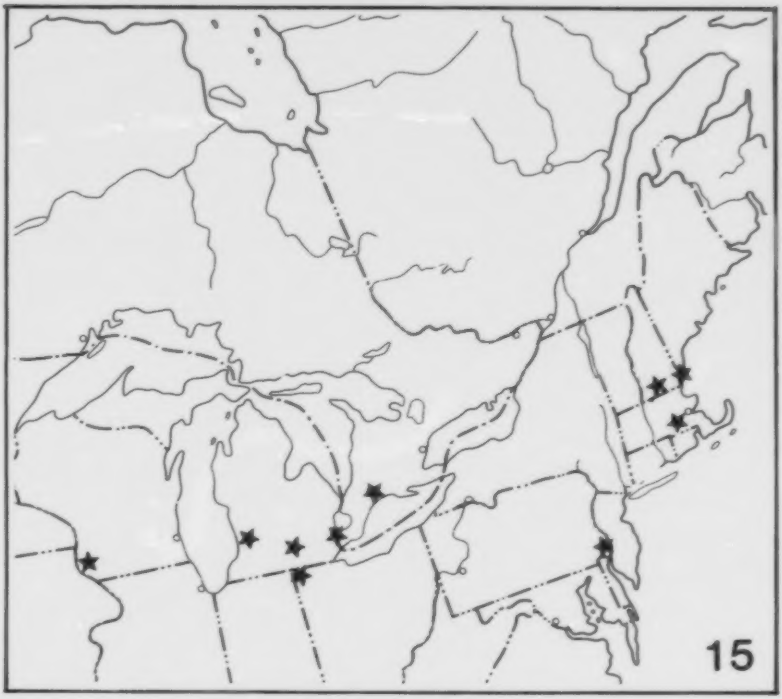
Figs. 65–67; Map 15

Pardosa bilineata Emerton, 1885:496, figs. 4, 4*a*, 4*b* (pl. 49).
Lycosa ocreata pulchra Montgomery, 1902:540, figs. 3, 4 (pl. 29).
Lycosa bilineata: Emerton 1909:207, figs. 4, 4*a*, 4*b* (pl. 6).
Schizocosa bilineata: Chamberlin 1904*a*:176, 1908:218, fig. 6 (pl. 16); Kaston 1948:314, figs. 1016 (pl. 51), 1026–1029 (pl. 52); Dondale and Redner 1978*a*:157, figs. 8, 47, 48.

Male. Total length 5.0–6.3 mm; carapace 2.93 ± 0.17 mm long, 2.08 ± 0.12 mm wide (20 specimens measured). Carapace streaked with black, usually with midstripe; midstripe dark, slender, anterior to dorsal groove; lateral areas of carapace brownish orange; submarginal bands broad, breaking out to carapace margins at several points. Chelicerae orange, with black lines on anterior surface. Sternum dull orange; pair of submarginal bands dull red, joining posteriorly. Legs orange; tibia I and base of basitarsus I with black brush. Abdomen with heart mark and indistinct chevrons; lateral areas of abdomen spotted and streaked with black or brown; venter dull yellow, with 2 pairs of dark longitudinal bands posterior to genital groove. Cymbium with approximately 18 terminal macrosetae; terminal apophysis slender, well sclerotized, extending to base of intromittent part of embolus; embolus rather short, curved; median apophysis with distal margin straight; palea without process (Fig. 65).

Female. Total length 5.7–8.7 mm; carapace 3.45 ± 0.22 mm long, 2.45 ± 0.21 mm. wide (20 specimens measured). Coloration essentially as in male. Leg I lacking brush. Epigynum hooded; hood with single shallow cavity; atrium deep anteriorly; median septum with sides of longitudinal piece parallel or wider anteriorly; transverse piece of median septum usually longer than longitudinal piece (*a* greater than *b* in Fig. 66); transverse piece excavated for one-half of its length (Fig. 66). Spermathecae ovoid, smooth, separated by approximately twice their width (Fig. 67).

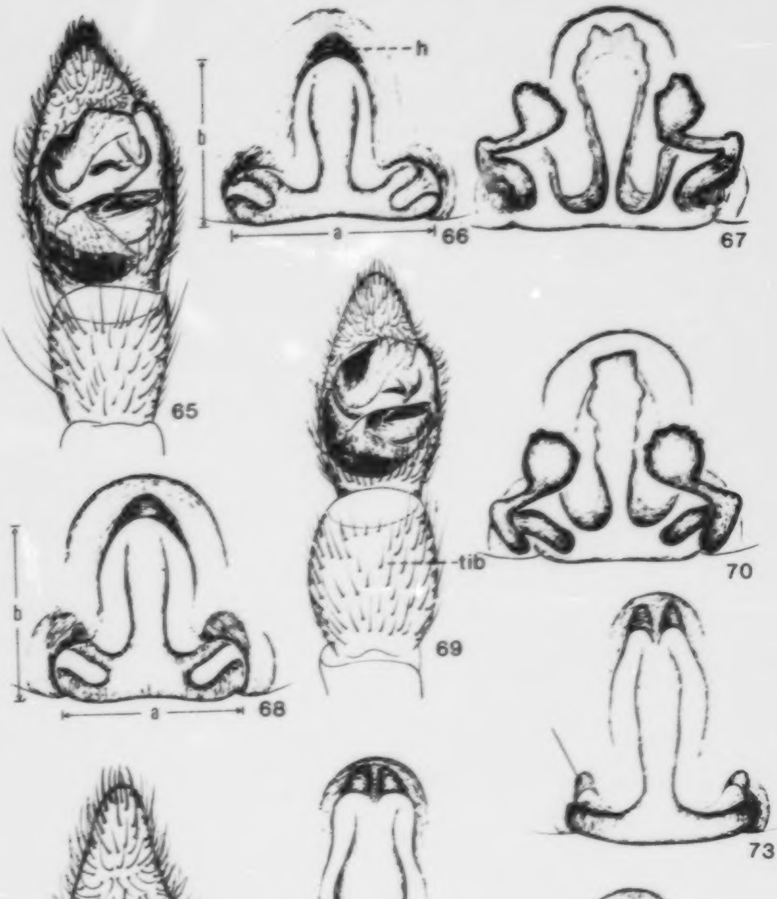
Comments. Specimens of *S. bilineata* are distinguished by the following characteristics: carapace with broad pale submarginal bands; sternum pale orange (giving the spider a generally pale appearance); leg I of males with tibial brush; palea lacking process; embolus short and curved; terminal apophysis short; hood with single cavity; median septum wider than long; transverse piece of median septum with surface excavated for about one-half its length; and spermathecae ovoid, smooth, and well separated.



Map 15. Collection localities of *Schizocosa bilineata*.

Range. Wisconsin, southernmost Ontario, and New Hampshire, south to Louisiana and Georgia.

Biology. Individuals of *S. bilineata* are found in open fields, meadows, and vegetated beaches. Maturity occurs in the spring. Sexual behavior was described by Montgomery (1903).



Figs. 65–74. Genitalia of *Schizocosa* spp. 65–67, *S. bilineata*. 65, palpus of male, ventral view; 66, epigynum, ventral view; 67, spermathecae, dorsal view; 68–70, *S. crassipalpata*. 68, epigynum, ventral view; 69, palpus of male, ventral view; 70, spermathecae, dorsal view; 71–74, *S. mimula*. 71, palpus of male, ventral view; 72, 73, epigynums, ventral view; 74, spermathecae, dorsal view. *a*, width of median septum; *b*, length of median septum; *co*, copulatory opening; *e*, embolus; *h*, hood; *tib*, tibia.

Schizocosa crassipalpata Roewer

Figs. 68–70; Map 16

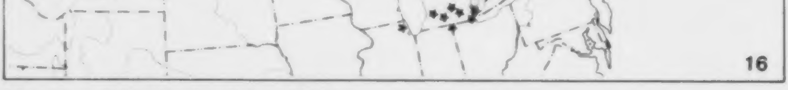
Lycosa crassipalpis Emerton, 1909:206, figs. 3, 3*a* (pl. 6).

Schizocosa crassipalpis: Chamberlin 1909:376; Kaston 1948:315, figs. 1020, 1021 (pl. 51), 1033 (pl. 52).

Schizocosa crassipalpata Roewer, 1951:440 (new name for *Lycosa crassipalpis* Emerton, preoccupied in genus *Lycosa*); Dondale and Redner 1978*a*:160, figs. 9, 49, 50.

Male. Total length 4.7–7.2 mm; carapace 3.43 ± 0.21 mm long, 2.44 ± 0.21 mm wide (20 specimens measured). Carapace streaked with black; lateral areas dark reddish brown; submarginal bands slender, unbroken; midstripe slender, dark, anterior to dorsal groove. Chelicerae dark orange. Sternum dark orange, suffused with black, sometimes with dark submarginal bands. Legs orange; tibia I lacking brush. Abdomen with heart mark and indistinct chevrons; lateral areas streaked and spotted with black; venter dull yellow, with 2 pairs of longitudinal bands; bands indistinct, dark, posterior to genital groove. Cymbium with approximately 18 terminal macrosetae; terminal apophysis slender, extending to base of intromittent part of embolus; embolus with intromittent part rather short, curved; median apophysis with distal margin straight; palea without process (Fig. 69).

Female. Total length 6.2–8.9 mm; carapace 3.57 ± 0.17 mm long, 2.57 ± 0.15 mm wide (20 specimens measured). Coloration essentially as in male. Epigynum hooded; hood with single cavity; atrium deep anteriorly; median septum with longitudinal piece parallel at sides or widening anteriorly; transverse piece usually as wide as long (*a* equal to *b* in Fig. 68), excavated approximately one-half its length (Fig. 68). Spermathecae ovoid, smooth, separated by approximately twice their width (Fig. 70).



Map 16. Collection localities of *Schizocosa crassipalpata*.

Comments. Specimens of *S. crassipalpata* are distinguished by the following characteristics: carapace with submarginal bands slender and unbroken; sternum orange; leg I of males lacking tibial brush; palea lacking process; embolus short and curved; terminal apophysis short; hood with single cavity; median septum as wide as long and with extremities of transverse piece excavated about one-half their length; and spermathecae smooth and well separated.

Range. Minnesota to Nova Scotia, south to Ohio and Massachusetts.

Biology. Specimens of *S. crassipalpata* have been collected in the tall grass of a relict prairie and in meadows and a bog in southern Ontario, as well as in grassy areas on sand dunes along Lake Erie. Hegdekar and Dondale (1969) reported evidence for a contact sex pheromone in this species. The spider has an annual life history and matures in the spring (Dondale 1977).

Schizocosa mimula (Gertsch)

Figs. 71–74

Lycosa mimula Gertsch, 1934*b*:5.

Lycosa coahuilana Gertsch and Davis, 1940:11, fig. 4.

Schizocosa mimula: Muma 1975:263; Dondale and Redner 1978*a*:161, figs. 25, 83–85.

Male. Total length 7.1–9.0 mm; carapace 3.82–4.63 mm long, 2.80–3.24 mm wide (5 specimens measured). Carapace with lateral areas dark brown to nearly black; submarginal bands rather wide, distinct, unbroken, undulating. Chelicerae brownish orange. Sternum yellowish brown to pale reddish brown. Legs yellowish brown basally, reddish brown distally. Abdomen with heart mark; lateral areas of abdomen nearly black, spotted with white; venter yellow. Cymbium with 14–16 terminal macrosetae; terminal apophysis short, slender, sinuous, not extending to base of intromittent part of embolus; embolus with intromittent part thick, curved retrolaterally at tip; median apophysis making angle of about 45° with longitudinal axis of palpus; distal margin nearly straight; palea without process (Fig. 71).

Female. Total length 9.1–10.3 mm; carapace 4.35–4.72 mm long, 2.95–3.48 mm wide (4 specimens measured). Coloration essentially as in male. Epigynum hooded; hood with paired deep cavities; atrium moderately deep; longitudinal piece of median septum somewhat convex at sides; transverse piece of median septum slender, curved, excised at ends; copulatory openings conspicuous, lying along distal third of anterior margins of transverse piece (Figs. 72, 73). Spermathecae ovoid, smooth, separated by approximately their width (Fig. 74).

Comments. Specimens of *S. mimula* are distinguished by the following characteristics: carapace with wide unbroken submarginal bands; leg I of male lacking tibial brush; palea lacking process; embolus thick and retrolaterally curved; terminal apophysis short; median apophysis strongly angled; copulatory openings conspicuous and lying along lateral third of transverse piece of median septum; hood with paired cavities; and spermathecae smooth and well separated.

Range. Utah, Colorado, Arizona, New Mexico, and northern Mexico. This species may occur in the arid interior of British Columbia.

Biology. Muma (1975) and Gertsch and Riechert (1976) collected individuals of *S. mimula* in arid grasslands in New Mexico.

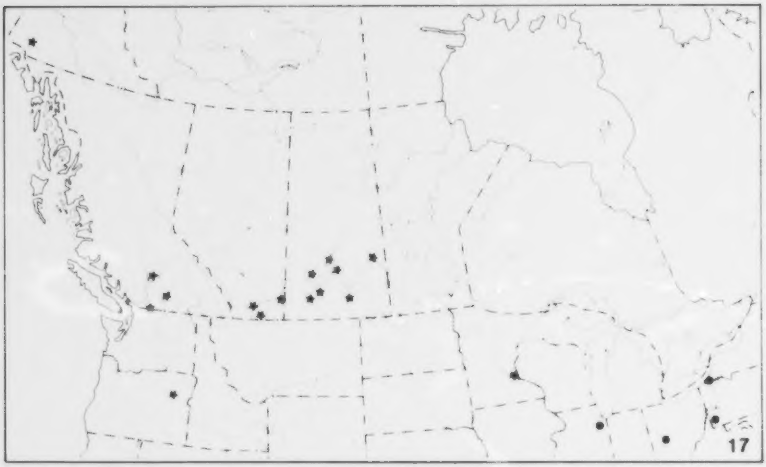
Schizocosa minnesotensis (Gertsch)

Figs. 75, 77, 79; Map 17

Lycosa minnesotensis Gertsch, 1934*b*:4, fig. 2.
Schizocosa minnesotensis: Gertsch and Wallace 1937:21; Dondale and Redner 1978*a*:162, figs. 26, 86, 87.

Male. Total length 6.6–9.8 mm; carapace 4.34 ± 0.50 mm long, 3.19 ± 0.43 mm wide (20 specimens measured). Carapace with lateral areas dark brown; submarginal bands narrow, unbroken. Chelicerae dark reddish brown. Sternum brown to nearly black, sometimes suffused with orange. Legs reddish brown; femora blackish. Abdomen with oblique black marks and paired small white spots; heart mark present; lateral areas dark brown to gray; venter yellow or yellowish brown. Cymbium with 12 or 13 terminal macrosetae; terminal apophysis absent; embolus with intromittent part minute, tapered; median apophysis with distal margin somewhat undulating; palea lacking process (Fig. 75).

Female. Total length 8.5–15.3 mm; carapace 4.75 ± 0.72 mm long, 3.37 ± 0.55 mm wide (20 specimens measured). Coloration essentially as in male. Epigynum hooded; hood with paired deep cavities; atrium moderately deep; median septum with longitudinal piece undulating at sides and with ends of transverse piece truncate



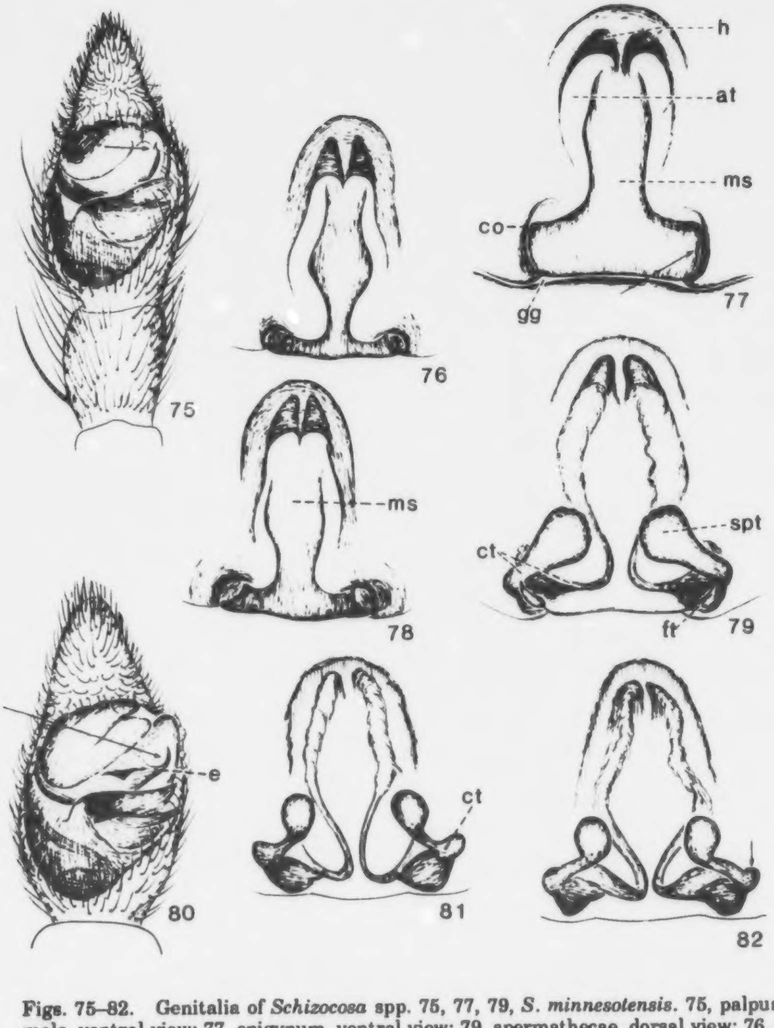
Map 17. Collection localities of *Schizocosa minnesotensis* (★) and *S. retrorsa* (●).

(Fig. 77). Spermathecae round, somewhat rugose, separated by approximately their width (Fig. 79).

Comments. Specimens of *S. minnesotensis* are distinguished by the following characteristics: carapace with narrow unbroken submarginal bands; leg I of male lacking tibial brush; palea lacking process; embolus minute and pointed; terminal apophysis absent; and median septum with truncate ends on transverse piece.

Range. Yukon Territory and interior British Columbia to Saskatchewan and Minnesota, south to New Mexico.

Biology. Gertsch (1934*b*) collected specimens of *S. minnesotensis* on sand dunes. Others have collected them in grasslands, wheat fields, or sand hills in the Central Plains, and in sagebrush, pinyon pine–juniper woodland, or range grassland in interior British Columbia. Maturity is attained in early spring, males appearing from mid April to early June and females from mid April to July. Egg sacs have been observed from mid May to early July. Oviposition is in shallow sealed cells in the soil (D.J. Buckle, personal communication, 1988).



Figs. 75–82. Genitalia of *Schizocosa* spp. 75, 77, 79, *S. minnesotensis*. 75, palpus of male, ventral view; 77, epigynum, ventral view; 79, spermathecae, dorsal view; 76, 78, 80–82, *S. retrorsa*. 76, 78, epigynums, ventral view; 80, palpus of male, ventral view; 81, 82, spermathecae, dorsal view. *at*, atrium; *co*, copulatory opening; *ct*, copulatory tube; *e*, embolus; *ft*, fertilization tube; *gg*, genital groove; *h*, hood; *ms*, median septum; *spt*, spermatheca.

Schizocosa retrorsa (Banks)

Figs. 76, 78, 80–82; Map 17

Pardosa retrorsa Banks, 1911:453, figs. 3, 6 (pl. 34).
Schizocosa retrorsa: Gertsch and Wallace 1937:20 (not fig. 12); Dondale and Redner 1978*a*:163, figs. 21, 75–78.

Male. Total length 5.7–7.4 mm; carapace 3.90 ± 0.29 mm long, 2.88 ± 0.24 mm wide (20 specimens measured). Carapace with lateral areas dark reddish brown; submarginal bands broken into series of spots. Chelicerae reddish brown to nearly black. Sternum dark reddish brown to nearly black; anterior half or two-thirds of sternum with distinct yellow midstripe. Legs yellowish brown; femora (and sometimes tibiae) with 2 or 3 diffuse black rings; tibial brush absent. Abdomen usually with heart mark and with black areas anteriorly at sides; longitudinal bands pale, joining and then breaking into series of spots posteriorly; venter black, sometimes with pale spot at middle. Cymbium with approximately 18 terminal macrosetae; terminal apophysis short, slender, not extending to base of intromittent part of embolus; embolus with intromittent part slender, pointed, somewhat curved; median apophysis with distal margin somewhat convex; palea without process (Fig. 80).

Female. Total length 7.8–12.8 mm; carapace 4.77 ± 0.32 mm long, 3.45 ± 0.27 mm wide (20 specimens measured). Coloration essentially as in male. Epigynum hooded; hood with paired deep cavities; atrium deep; median septum with longitudinal piece having convex lateral margins; transverse piece of median septum slender, having ends excised and anterior margins conspicuously channeled (Figs. 76, 78). Copulatory tubes with conspicuous prominence laterally; spermathecae ovoid, smooth, separated by approximately twice their width (Figs. 81, 82).

Comments. Specimens of *S. retrorsa* are distinguished by the following characteristics: carapace with broken submarginal bands; sternum with yellow midstripe; venter black (sometimes with pale spot at middle); leg I of male lacking tibial brush; embolus with intromittent part short and curved; terminal apophysis short; hood with paired deep cavities; transverse piece of median septum excised and with conspicuous channels along anterior margin; and copulatory tubes with conspicuous lateral prominence.

Range. Kansas, Illinois, and northern New York, south to Florida and to northern Mexico.

Biology. Nothing is recorded.

Schizocosa avida (Walckenaer)

Figs. 3, 83–90; Map 18

Lycosa avida Walckenaer, 1837:322; Kaston 1948:326, figs. 1063, 1064 (pl. 54), 1085–1089 (pl. 56).

Lycosa erratica Hentz, 1844:391, fig. 8 (pl. 17); Chamberlin 1908:251, figs. 3, 4.

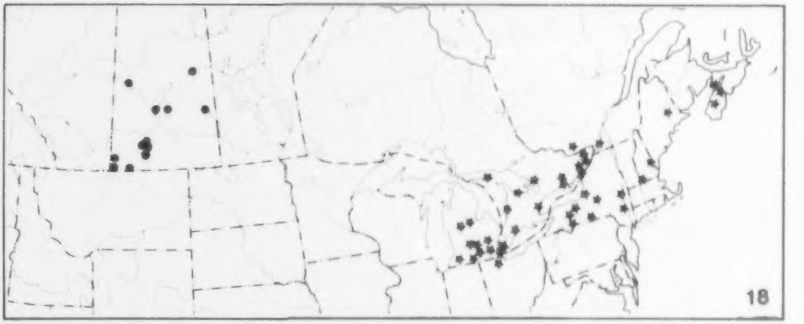
Lycosa sagittata Hentz, 1844:391, figs. 3, 4 (pl. 18).

Lycosa propinqua Blackwall, 1846:31.

Tarentula lepida Keyserling, 1877:631, fig. 1 (pl. 7).

Schizocosa avida: Gertsch and Wallace 1937:19; Dondale and Redner 1978*a*:164, figs. 10–12, 51–54, 89.

Male. Total length 6.3–9.8 mm; carapace 4.62 ± 0.36 mm long, 3.57 ± 0.24 mm wide (30 specimens measured). Carapace with lateral areas dark reddish brown; submarginal bands pale, narrow (as in Fig. 83), sometimes breaking out to carapace margins. Chelicerae dark reddish brown. Sternum reddish brown. Legs pale reddish brown or yellowish brown; femora with indistinct dark rings; tibial brush absent. Abdomen with heart mark and with longitudinal bands; bands pale, meeting posteriorly, sometimes interrupted by transverse black bars; lateral areas of abdomen with few oblique dark marks; venter yellow to pale reddish brown, often with narrow black bands laterally. Cymbium with approximately 8 terminal macrosetae; terminal apophysis short, slender, not extending to intromittent part of embolus; embolus with intromittent part slender, pointed, sinuous; median apophysis with distal margin strongly convex; palea lacking process (Figs. 84, 85, 88).



Map 18. Collection localities of *Schizocosa avida* (★) and *S. cespitum* (●).

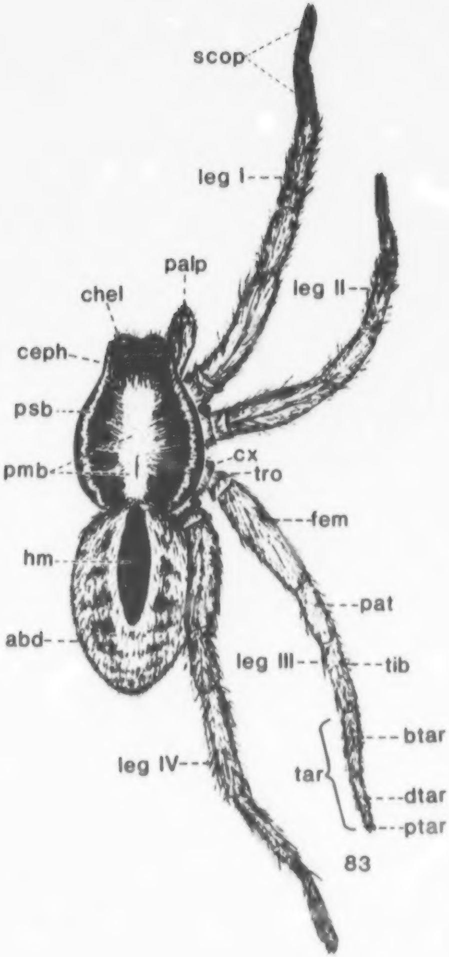

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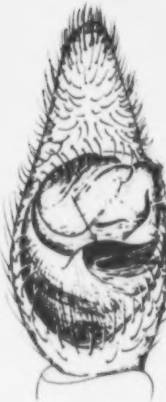
Fig. 83. Body of *Schizocosa avida* female, dorsal view. *abd*, abdomen; *btar*, basitarsus; *ceph*, cephalothorax; *chel*, chelicera; *cx*, coxa; *dtar*, distitarsus; *fem*, femur; *hm*, heart mark; *pat*, patella; *pmb*, pale median band; *psb*, pale submarginal band; *ptar*, pretarsus; *scop*, scopula; *tar*, tarsus; *tib*, tibia; *tro*, trochanter.



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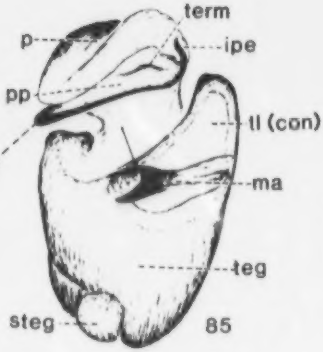
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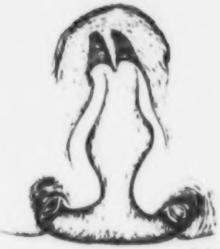

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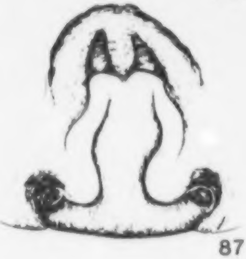

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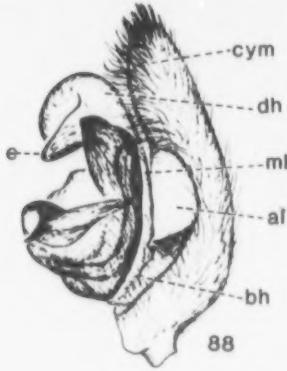
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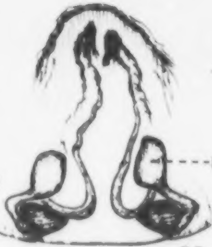

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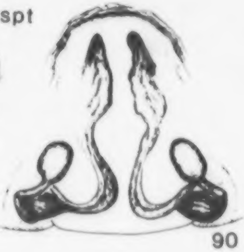

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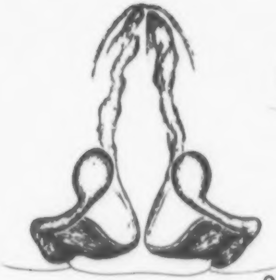

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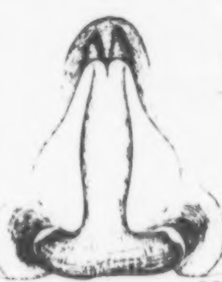

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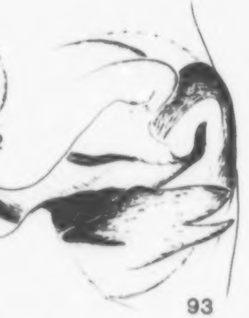

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Female. Total length 6.6–14.7 mm; carapace 5.31 ± 1.21 mm long, 3.94 ± 0.46 mm wide (30 specimens measured). Coloration essentially as in male (Figs. 3, 83). Epigynum hooded; hood with paired openings; atrium moderately deep; median septum with longitudinal piece convex laterally; transverse part of median septum rather slender, deeply excised at tips (Figs. 86, 87). Spermathecae usually angular, smooth, separated by approximately twice their width (Figs. 89, 90).

Comments. Specimens of *S. avida* are distinguished by the following characteristics: carapace with narrow submarginal bands that sometimes break out to carapace margins; legs pale reddish brown or yellowish brown; leg I of males lacking tibial brush; venter pale, often with black lateral bands; terminal apophysis short; distal margin of median apophysis convex; intromittent part of embolus slender and sinuous; hood cavities paired; transverse piece of median septum with deep excisions at ends; and spermathecae angular.

Range. South Dakota, southern Ontario, and Nova Scotia, south to northern Mexico and Florida.

Biology. *Schizocosa avida* has an annual life history. In southern Ontario, it matures in the spring (Dondale 1977). Its usual habitats are fields and meadows. Large juveniles that are about to molt and adult females about to oviposit often construct shallow burrows in the open or under the edge of a stone or log (Fig. 3). Hegdekar and Dondale (1969) gave evidence for a contact sex pheromone produced by mature females, and Rovner (1973) and Rovner and Wright (1975) described copulation. Dondale and Redner (1978*a*) briefly listed the essential features of courtship, and Rovner (1975) described the male stridulatory apparatus. Rovner et al. (1973) demonstrated the mechanism by which the young spiderlings are able to cling to the mother's abdomen.

Figs. 84–93. Genitalia of *Schizocosa* spp. 84–90, *S. avida*. 84, 85, 88, palpus of male: 84, ventral view; 88, retrolateral view; 85, genital bulb, ventral view; 86, 87, epigynums, ventral view; 89, 90, spermathecae, dorsal view. 91–93, *S. cespitum*. 91, spermathecae, dorsal view; 92, epigynum, ventral view; 93, embolus and median apophysis, ventral view. *al*, alveolus; *bh*, basal haematodocha; *con*, conductor; *cym*, cymbium; *dh*, distal haematodocha; *e*, embolus; *ipe*, intromittent part of embolus; *ma*, median apophysis; *mh*, middle haematodocha; *p*, palea; *pp*, pars pendula; *spt*, spermatheca; *steg*, subtegulum; *teg*, tegulum; *term*, terminal apophysis; *tl*, tegular lobe.

Schizocosa cespitum Dondale & Redner

Figs. 91–93; Map 18

Schizocosa cespitum Dondale and Redner, 1978*a*:167, figs. 20, 69, 70.

Male. Total length 6.4–7.5 mm; carapace 3.34 ± 0.30 mm long, 2.50 ± 0.28 mm wide (23 specimens measured). Carapace with lateral areas dark reddish brown; submarginal bands narrow, indistinct, usually unbroken. Chelicerae dark reddish brown to nearly black. Sternum dark brownish orange to nearly black. Legs reddish brown; coxa and femur I (and often femur II) nearly black; femora II–IV with indistinct black rings. Abdomen usually with heart mark, with transverse dark bars; lateral areas of abdomen yellow to black; venter usually black, sometimes entirely pale or with pale midstripe. Cymbium with 7–9 terminal macrosetae; terminal apophysis short, thick, pointed, not extending to intromittent part of embolus; intromittent part of embolus short, broad, pointed, somewhat curved retrolaterally at tip; median apophysis with distal margin somewhat convex, undulating; palea lacking process (Fig. 93).

Female. Total length 6.8–12.0 mm; carapace 3.93 ± 0.25 mm long, 2.89 ± 0.21 mm wide (23 specimens measured). Coloration essentially as in male but legs less dark and venter entirely black. Epigynum hooded; hood with paired deep cavities; atrium moderately deep; median septum with longitudinal piece convex at sides; transverse piece of median septum deeply excised at ends (Fig. 92). Spermathecae ovoid, smooth or somewhat rugose, separated by approximately twice their width (Fig. 91).

Comments. Specimens of *S. cespitum* are distinguished by the following characteristics: size small; carapace with submarginal bands usually unbroken; venter usually black (more frequently in females); terminal apophysis short; embolus short, broad, pointed, and retrolaterally curved; hood with paired cavities; transverse piece of median septum with deep excisions; and spermathecae ovoid and well separated.

Range. Saskatchewan south of approximately 54°N latitude.

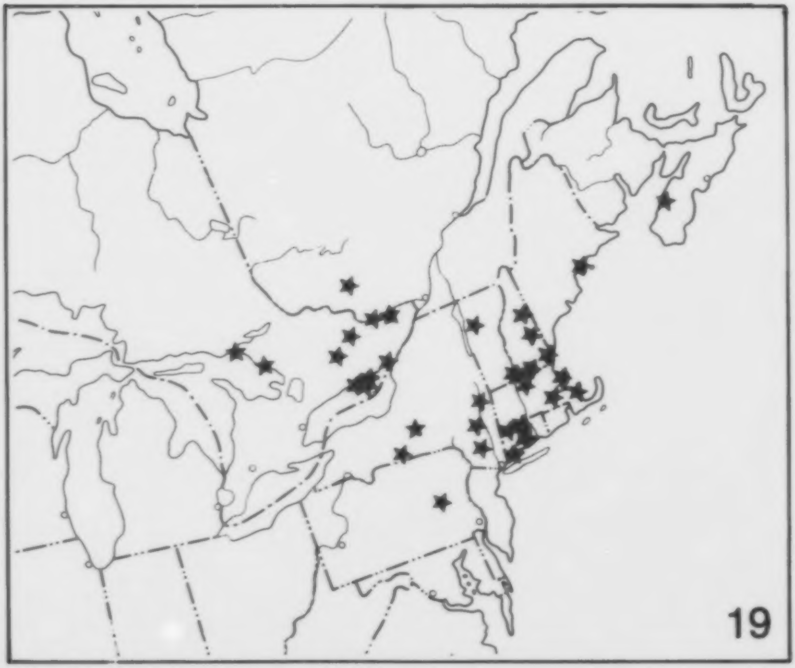
Biology. Collections of *S. cespitum* have been made in the shortgrass prairie in south-central and southwestern Saskatchewan, in grassy ditches, and in and at the edges of wheat fields near Saskatoon. Maturity is attained in the spring, with adult males appearing from mid May to mid June and adult females from mid May to early August (D.J. Buckle, personal communication).

Schizocosa communis (Emerton)

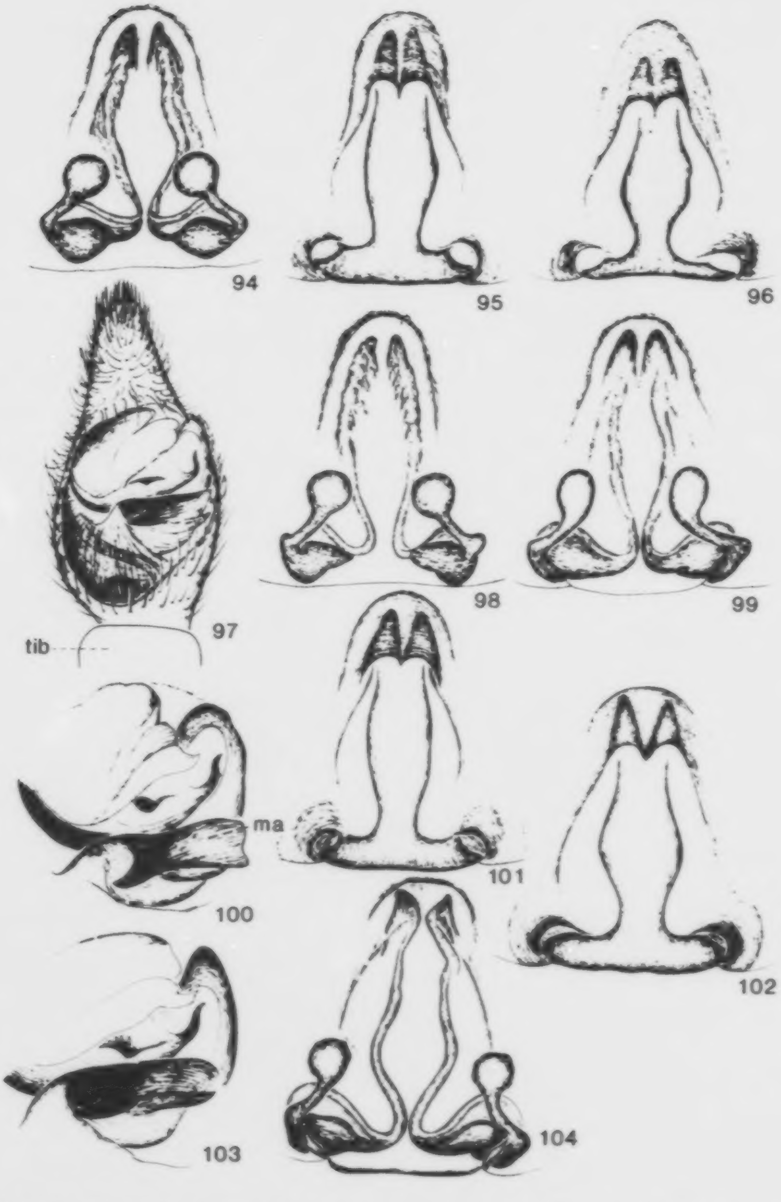
Figs. 94–97; Map 19

Lycosa communis Emerton, 1885:489, figs. 6*b*, 6*d* (pl. 47).
Schizocosa heasmani Dondale, 1969:751, figs. 7, 8, 14–17, 24.
Schizocosa communis: Dondale and Redner, 1978*a*:167, figs. 14, 55–58.

Male. Total length 5.5–8.6 mm; carapace 3.91 ± 0.29 mm long, 2.96 ± 0.27 mm wide (34 specimens measured). Carapace with lateral areas dark reddish brown; submarginal bands usually broken into series of spots (at least anteriorly). Chelicerae dark reddish brown. Sternum dark yellowish or dark reddish brown, sometimes with pale midstripe. Legs yellowish brown to reddish brown; coxa and femur I blackish; femora II–IV with 2 or 3 indistinct black rings. Abdomen usually with heart mark and dark transverse bars; lateral areas of abdomen dark gray, brown, or black; venter yellowish brown, sometimes with slender black lateral bands. Cymbium with 7–14 terminal macrosetae; terminal apophysis short, slender, sinuous; embolus with intromittent part slender, pointed, somewhat sinuous;



Map 19. Collection localities of *Schizocosa communis*.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Figs. 94–104. Genitalia of *Schizocosa* spp. 94–98, *S. communis*. 94, 98, spermathecae, dorsal view; 95, 96, epigynums, ventral view; 97, palpus of male, ventral view; 99–104, *S. mccooki*. 99, 104, spermathecae, dorsal view; 100, 103, embolus and median apophysis, ventral view; 101, 102, epigynums, ventral view. *ma*, median apophysis; *tib*, tibia.

median apophysis with distal margin nearly straight; palea without process (Fig. 97).

Female. Total length 8.0–12.8 mm; carapace 4.42 ± 0.46 mm long, 3.38 ± 0.29 mm wide (42 specimens measured). Coloration essentially as in male but coxa and femur I not black. Epigynum hooded; hood with paired cavities; atrium deep; median septum with longitudinal piece convex at sides; transverse piece of median septum deeply excised at ends (Figs. 95, 96). Spermathecae ovoid or round, smooth or somewhat rugose, separated by approximately twice their width (Figs. 94, 98).

Comments. Specimens of *S. communis* are distinguished by the following characteristics: size rather small; carapace with submarginal bands broken into a series of spots (at least anteriorly); coxa and femur I of males black; distal margin on median apophysis straight; spermathecae round or ovoid; and venter with relatively small area of black skin.

Range. Southeastern Ontario to Nova Scotia, south to Pennsylvania.

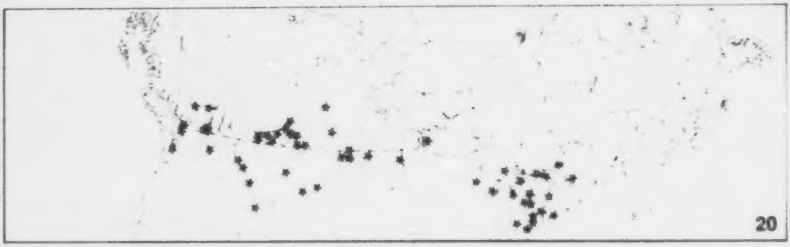
Biology. This species has an annual life history and matures in spring. It occupies somewhat less moist meadows and hayfields than *S. avida* (Dondale 1977). Brief notes on courtship were given by Dondale and Redner (1978*a*).

Schizocosa mccooki (Montgomery)

Figs. 99–104; Map 20

Lycosa mccooki Montgomery, 1904:283, fig. 11 (pl. 18).
Lycosa pacifica Banks, 1904*a*:354, fig. 6 (pl. 38).
Lycosa tusapa Chamberlin, 1925*a*:228, new synonym.
Schizocosa wasatchensis Chamberlin and Ivie, 1942:39.
Schizocosa mccooki: Dondale and Redner 1978*a*:169, figs. 13, 15, 59–62.

Male. Total length 9.1–15.5 mm; carapace 5.35 ± 1.13 mm long, 4.06 ± 0.91 mm wide (131 specimens measured). Carapace sometimes with slender midstripe; lateral areas dark reddish brown; submarginal bands narrow and sometimes breaking out to carapace margins. Chelicerae dark reddish brown to black. Sternum dark orange to blackish. Legs with coxae and femora orange; trochanters reddish orange; femora I and II sometimes with black prolateral bands; femora III and IV sometimes with black rings. Abdomen



Map 20. Collection localities of *Schizocosa mccooki*.

usually with heart mark, sometimes with dark transverse bars; lateral areas of abdomen mottled; venter usually with extensive black areas, sometimes with black lateral bands or 1 or 2 pale spots on black background, rarely entirely pale. Cymbium with 13–24 terminal macrosetae; terminal apophysis short, triangular, not extending to base of intromittent part of embolus; margin of terminal apophysis thick; embolus with intromittent part slender, pointed, sinuous; median apophysis with distal margin usually somewhat convex; palea lacking process (Figs. 100, 103).

Female. Total length 9.6–22.7 mm; carapace 5.99 ± 1.46 mm long, 4.46 ± 1.15 mm wide (153 specimens measured). Coloration essentially as in male. Epigynum hooded; hood with paired cavities; atrium moderately deep; median septum with longitudinal piece convex at sides; transverse piece of median septum rounded, variably excised at ends (Figs. 101, 102). Spermathecae round or ovoid, smooth or somewhat rugose, separated by two or more times their width (Figs. 99, 104).

Comments. Specimens of *S. mccooki* are highly variable in size but are distinguished by the following characteristics: carapace with unbroken submarginal bands (except for extensions to the margins); femur and coxa I pale (except for occasional black prolateral band on femur); distal margin of median apophysis somewhat convex; terminal apophysis short and triangular; intromittent part of embolus slender and sinuous; palea lacking process; ends of transverse piece of median septum rounded and variably excised; and spermathecae round or ovoid, well separated.

Range. Yukon Territory and British Columbia to Ontario, south to Mexico.

Biology. Allred (1975) collected many specimens of *S. mccooki* in pitfall traps in sagebrush in Idaho. Donald C. Lowrie (personal communication, 1978) collected them by headlamp at night in pinyon pine woodland in New Mexico; the spiders were concealed beneath surface objects during daylight hours. Dondale and Redner (1978*a*) collected them in pitfall traps among the grass and sedges on sand dunes on the north shore of Lake Erie. Buckle (1972) recorded, by oscilloscope, the stridulation produced by the male and described the courtship movements; Stratton and Lowrie (1984) described courtship in more detail. Maturity is attained from mid June to early July, with adult males present from mid June to July and adult females from mid June to August (D.J. Buckle, personal communication, 1988).

Genus *Gladicosa* Brady

Members of the small North American genus *Gladicosa* are medium in size and moderately stout in body, chelicerae, and legs. The most widespread member of the genus, *G. gulosa* (Walckenaer), has been fancifully named the drumming spider on account of the sound produced by the rapid vibration of the palpi and abdomen of courting males against fallen leaves (Allard 1936). The sound can be heard at a distance of several metres and may be noticed in eastern deciduous forests in early spring.

Description. Total length 7.8–18.8 mm. Carapace rather broad and thick, of uniform height between dorsal groove and middle row of eyes, and somewhat sloped in front; carapace drably colored in hues of brown, yellow, gray, and dull red or orange; median band broad, irregular, pale; submarginal bands irregular. Anterior row of eyes procurved, shorter than middle row; anterior median eyes larger than anterior lateral eyes. Chelicerae dark, hairy; retromargin with 3 teeth. Sternum pale to dark, hairy. Legs moderately long and stout; scopulae dense; tibia I with or without brush of black setae; femur I with 3 dorsal macrosetae, 2 prolaterals, 2 or 3 retrolaterals; tibia I with no dorsal macrosetae, 1 or 2 prolaterals, 0–2 retrolaterals, 3 pairs of ventrals; basitarsus I with no dorsal macrosetae, 0–3 prolaterals, 0–3 retrolaterals, 3 pairs of ventrals, and an unpaired ventral at tip. Abdomen ovoid, drably colored; anterior end with brush of erect curved setae. Tibia of male palpus longer than wide, sometimes swollen, shorter than cymbium, with stridulatory organ at tip; terminal apophysis and embolus massive, sword-shaped, parallel to each other; embolus largely concealing the terminal apophysis and both sometimes concealing palea; median apophysis with mesally directed spur; tegular lobe large, extending nearly to tip of alveolus, functioning as conductor (Fig. 105). Epigynum with large approximately triangular plate; atrium deep; median septum slender, flat, abbreviated posteriorly (Fig. 106). Spermathecae rather large, rounded or club-shaped, sometimes extending as far anteriorly as hood (Fig. 107).

Comments. Members of the genus *Gladicosa* are distinguished from those of other lycosid genera by the massive parallel terminal apophysis and embolus and by the abbreviated median septum. The genus is restricted to eastern North America and comprises five species (Brady 1987). A single species occurs in Canada.

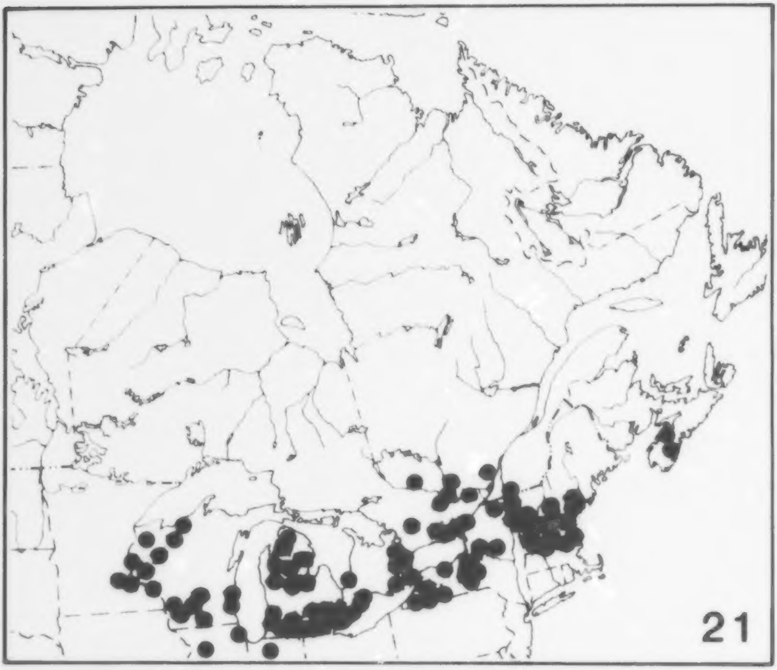
Gladicosa gulosa (Walckenaer)

Figs. 105–107; Map 21

Lycosa gulosa Walckenaer, 1837:338; Kaston 1948:328, figs. 1106–1109 (pl. 57); Chamberlin 1908:265, figs. 6, 7 (pl. 21).
Lycosa kochii: Emerton 1885:485, figs. 6–6c (pl. 46).
Lycosa nigraurata Montgomery, 1902:564, fig. 53 (pl. 30).
Lycosa purcellii Montgomery, 1902:566, figs. 30, 31 (pl. 30).
Gladicosa gulosa: Brady 1987:290, figs. 5, 6–9, 35, 36.

Male. Total length 11.46 ± 0.95 mm; carapace 5.50 ± 0.38 mm long, 4.14 ± 0.19 mm wide (10 specimens measured). Carapace sometimes with paired black areas on posterior declivity; lateral areas brownish orange or dark reddish brown, darker at margins; median band broad, pale, irregular; submarginal bands indistinct, irregular. Chelicerae brownish orange or dark reddish brown. Sternum yellowish orange to reddish. Legs yellowish to orange, sometimes reddish distally; femora sometimes with 3 indistinct dark rings. Abdomen dull reddish to brown or gray; anterolateral area with paired black longitudinal bands; venter dull reddish, often with few to many small black spots, sometimes entirely gray or entirely black. Cymbium with cluster of stout macrosetae at tip; palea largely concealed in ventral view by terminal apophysis and embolus; terminal apophysis and embolus massive, parallel, strongly angled retrolaterally near middle, with tips lying on large tegular lobe; median apophysis somewhat quadrangular, rather flat, with mesally directed spur near middle of distal margin (Fig. 105).

Female. Total length 13.18 ± 1.55 mm; carapace 5.88 ± 0.28 mm long, 4.36 ± 0.25 mm wide (10 specimens measured). Coloration essentially as in male. Epigynum hooded, with plate; plate large, approximately triangular, somewhat wider than long; hood broad, with cavity extending far anteriorly and minutely subdivided; atrium deep, abruptly widening posteriorly; median septum flat, slender,



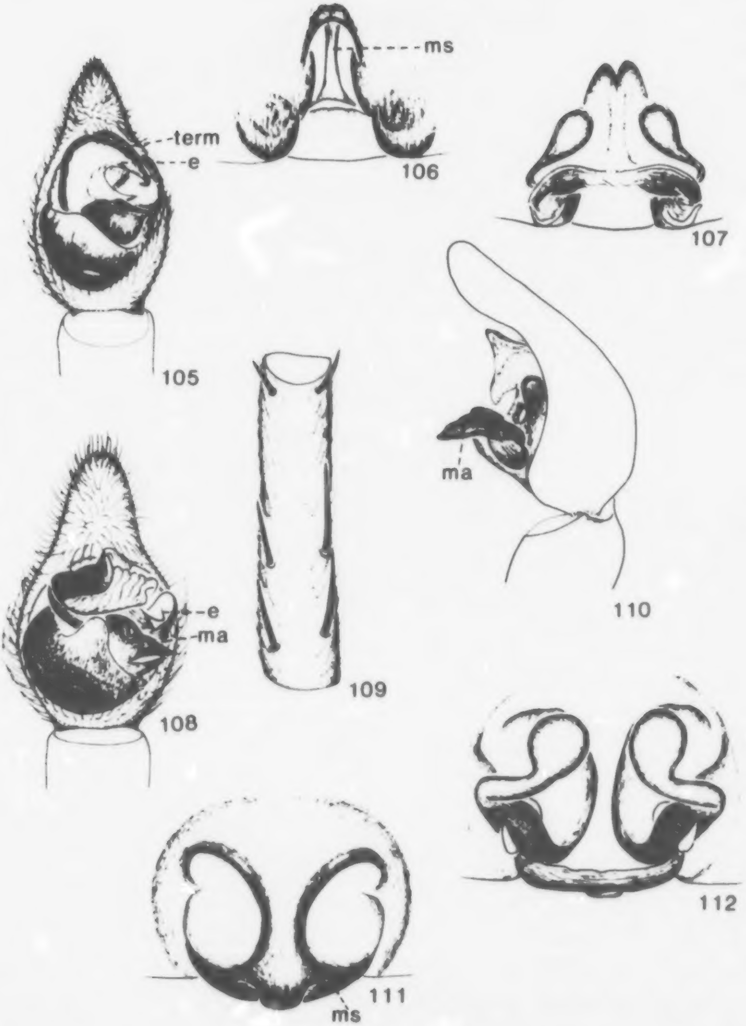
Map 21. Collection localities of *Gladicosa gulosa*.

abbreviated posteriorly at a point approximately two-thirds length of plate (Fig. 106); copulatory openings located at posterior end of median septum. Copulatory tubes long, slender, with 2 open coils; spermathecae club-shaped, somewhat flattened, with several minute nodules (Fig. 107).

Comments. Specimens of *G. gulosa* are distinguished by the following characteristics: embolus and terminal apophysis massive, parallel, and strongly angled retrolaterally near middle; median apophysis with spur; median septum abbreviated; epigynum hooded; copulatory tubes coiled; and spermathecae club-shaped and somewhat flattened.

Range. South Dakota and Ontario to Nova Scotia, south to Colorado, Texas, and Georgia.

Biology. The usual habitats of *G. gulosa* are deciduous forests, particularly open oak forests. Maturity is attained in autumn, and mating and oviposition take place the following spring. Males have been recorded from September to June and females from September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Figs. 105–112. Structures of Lycosidae. 105–107, *Gladicosa gulosa*. 105, palpus of male, ventral view; 106, epigynum, ventral view; 107, spermathecae, dorsal view; 108–112, *Varacosa avara*. 108, 110, palpus of male: 108, ventral view; 110, retrolateral view. 109, tibia I of male, ventral view; 111, epigynum, ventral view; 112, spermathecae, dorsal view. *e*, embolus; *ma*, median apophysis; *ms*, median septum; *term*, terminal apophysis.

to July. Eggs were observed by Kaston (1948) in May and June. Kaston (1936) described courtship behavior, and Allard (1936) and Harrison (1969) the sounds produced.

Genus *Varacosa* Chamberlin & Ivie

Members of the genus *Varacosa* are of medium size and possess thick bodies and legs. The predominant color is yellowish brown. They are secretive spiders, shunning daylight, and are best collected by pitfall traps placed in tall grass or in shady woods.

Description. Total length 7.5–11.0 mm. Carapace rather broad, low, sloped at front, brownish orange or reddish brown; rim dark; submarginal bands pale; median band pale, widening anterior to dorsal groove and enclosing pair of dark longitudinal streaks; median stripe slender, sometimes present. Anterior row of eyes somewhat procurved, shorter than middle row; anterior median eyes somewhat larger than anterior lateral eyes and closer to the latter than to each other, or equidistant from them. Chelicerae with 3 prolateral teeth, 3 retrolaterals. Sternum yellowish orange or reddish orange. Legs rather short, stout, yellowish brown; scopulae moderately dense; setae numerous, long; femur I with 2 or 3 dorsal macrosetae, 1 or 2 prolaterals; tibia I with no dorsal macrosetae, 1 or 2 prolaterals, 0–2 retrolaterals, 3 pairs of ventrals; basitarsus I with no dorsal macrosetae, 1 or 2 prolaterals, 1 retrolateral, 2 pairs of ventrals (plus an unpaired ventral at tip). Abdomen thick, ovoid, grayish brown; venter dull yellowish or dull red. Cymbium without terminal macrosetae; terminal apophysis small, lobe-like; embolus broad and flat basally, truncate, narrowed to slender sinuous intromittent part; tip of embolus lying mainly on lobe of tegulum; tegular lobe functioning as conductor; median apophysis short, flat, with ventrally directed spur (Figs. 108, 110, 115). Epigynum with strong median septum; median septum with ends of transverse piece angled or curved anteriorly and flanked by paired bubble-like swellings (Figs. 111, 113). Copulatory tubes broad and bulbous at base, becoming slender and curved; spermathecae large, rounded, smooth (Figs. 112, 114).

Comments. Members of the genus *Varacosa* are distinguished from those of other lycosid genera by the following characteristics: body size medium; body and legs thick; coloring yellowish brown; carapace with paired dark longitudinal streaks between dorsal groove and posterior row of eyes; embolus broad, flat, with truncate basal part and slender sinuous intromittent part; median septum with transverse piece curved or angled anteriorly; and atrium occupied by paired bubble-like swellings.

The genus *Varacosa* is restricted to North America and comprises five described species, one of which is Mexican (Jiménez and Dondale 1987). Two species are represented in Canada. Brady (1979) revised all of the described species under the generic name *Trochosa*, but we believe the genital characters listed above clearly distinguish *Varacosa* from *Trochosa*.

Key to species of *Varacosa*

1. Male 2
   Female 3

2(1). Median apophysis transverse, with ventral spur arising near its base (Fig. 108). Tibia I with basal retrolateral macrosetae not overlapping (Fig. 109) .... ***avara* (Keyserling)** (p. 93)

Median apophysis oblique, with ventral spur arising farther from base (Fig. 115). Tibia I with basal retrolateral macrosetae overlapping (Fig. 116) .... ***shenandoa* Chamberlin & Ivie** (p. 94)

3(1). Median septum with transverse part rounded at posterior margin (Fig. 111) .... ***avara* (Keyserling)** (p. 93)

Median septum with transverse part angular at posterior margin (Fig. 113) .... ***shenandoa* Chamberlin & Ivie** (p. 94)

Clé des espèces de *Varacosa*

1. Mâle 2
   Femelle 3

2(1). Apophyse médiane orientée transversalement, avec éperon ventral situé près de sa base (fig. 108). Tibia I avec de grandes soies du côté arrière à sa base qui ne se chevauchent pas (fig. 109) .... ***avara* (Keyserling)** (p. 93)

Apophyse médiane orientée obliquement, avec éperon ventral situé loin de sa base (fig. 115). Tibia I avec de grandes soies du côté arrière à sa base qui se chevauchent (fig. 116) .... ***shenandoa* Chamberlin & Ivie** (p. 94)

3(1). Septum médian avec partie transversale arrondie à la marge postérieure (fig. 111) ..... ***avara* (Keyserling)** (p. 93)

Septum médian avec partie transversale anguleuse à la marge postérieure (fig. 113) .... ***shenandoa* Chamberlin & Ivie** (p. 94)

Varacosa avara (Keyserling)

Figs. 108–112; Map 22

Trochosa avara Keyserling, 1877:661, figs. 38, 39 (pl. 8); Brady 1979:190, figs. 3, 19–21, 36–40.

Lycosa rufiventris Banks, 1892:65, fig. 35 (pl. 3).

Lycosa avara: Chamberlin 1908:279, figs. 1–3 (pl. 20); Kaston 1948:329, figs. 1091 (pl. 56), 1114–1116 (pl. 57).

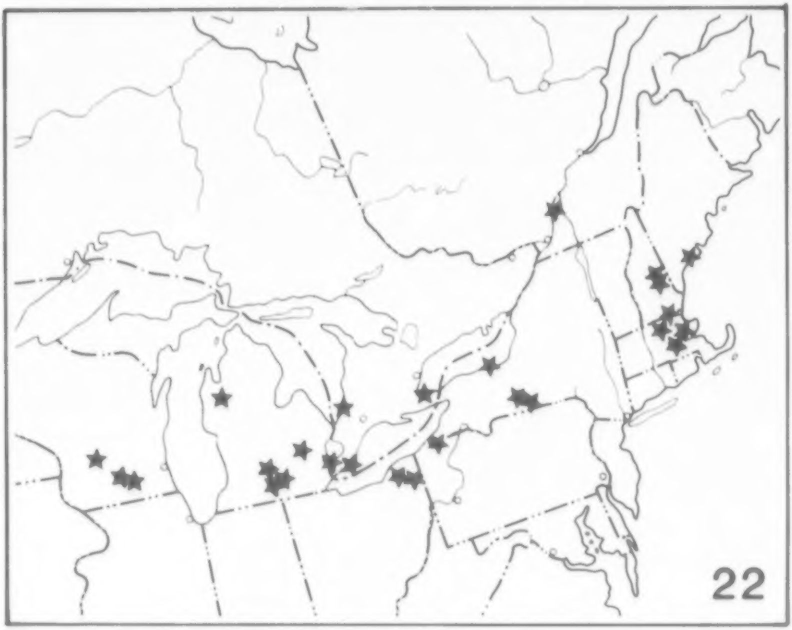
Trochosa (*Varacosa*) *avara*: Chamberlin and Ivie 1942:37.

Varacosa avara: Roewer 1954:306.

Male. Total length 7.69–8.15 mm; carapace 4.06–4.25 mm long, 3.01–3.11 mm wide (3 specimens measured). Carapace with reddish brown lateral areas; rim dark; submarginal bands indistinct, pale; median band pale, widening anterior to dorsal groove; median band enclosing paired dark streaks and slender midstripe. Chelicerae dark reddish brown; promargin and retromargin each with 3 teeth. Sternum reddish orange. Legs rather setaceous, reddish orange or yellowish orange, without obvious rings; tibia I with basal retrolateral macrosetae not unusually long (Fig. 109). Abdomen grayish to brownish, finely speckled with black, lacking heart mark and chevrons; venter yellowish. Embolus broad, thin, truncate; intromittent part slender, hooked; median apophysis slender, pointed, transverse, with spur arising ventrally near base (Fig. 108).

Female. Total length 9.10 ± 1.20 mm; carapace 4.22 ± 0.57 mm long, 3.06 ± 0.36 mm wide (19 specimens measured). Coloration essentially as in male. Epigynum hoodless, with plate; setae erect, black, in patch anterior to plate; median septum convex ventrally, broad anteriorly, slender at middle; ends of transverse piece of median septum curved far anteriorly (Fig. 111). Spermathecae large, rounded (Fig. 112).

Comments. Specimens of *V. avara* are distinguished by the following characteristics: median apophysis transverse and with spur basal in position; transverse part of median septum rounded; and tibia I of male with basal retrolateral macrosetae not unusually long.



Map 22. Collection localities of *Varacosa avara*.

Range. Eastern Nebraska and eastern Kansas to southern Quebec and Maine, south to Texas and northern Florida.

Biology. Specimens of *V. avara* have been collected under stones in meadows and pastures and along forest margins. Adult males have been found from September to the following April and adult females from October to the following July (Peck and Whitcomb 1978). Egg sacs were observed in June by Kaston (1948).

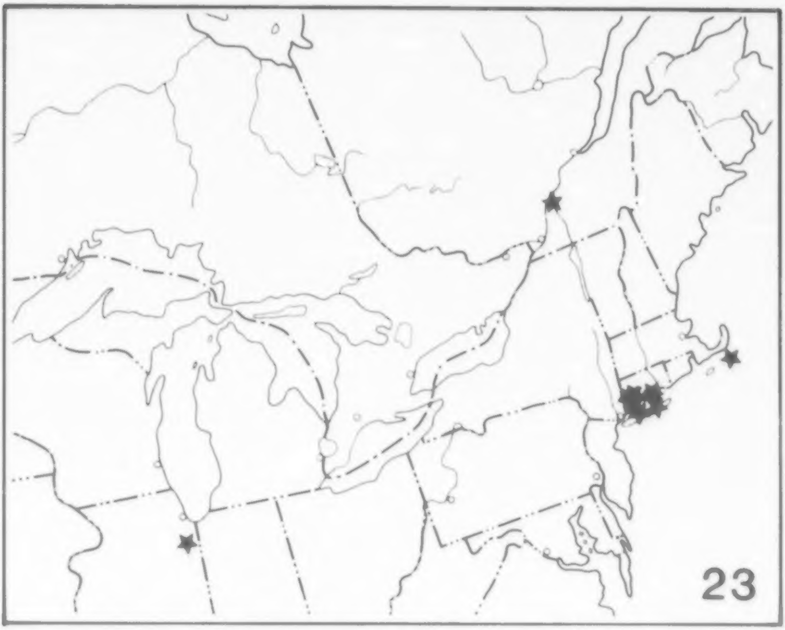
Varacosa shenandoa Chamberlin & Ivie

Figs. 113–117; Map 23

Trochosa (*Varacosa*) *shenandoa* Chamberlin and Ivie, 1942:37, fig. 78.

Varacosa shenandoa: Roewer 1954:307.

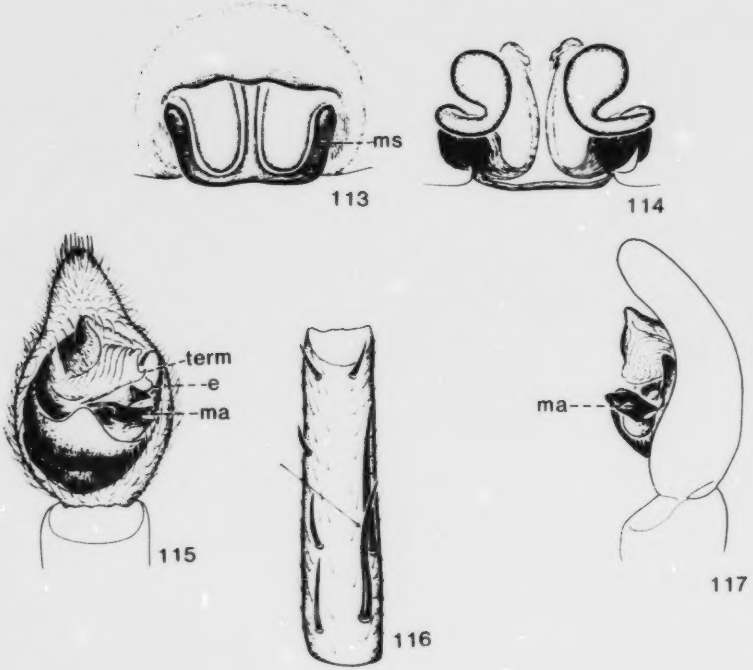
Trochosa shenandoa: Brady 1979:200, figs. 5, 17, 18, 22–25, 34, 35, 41–43.



Map 23. Collection localities of *Varacosa shenandoa*.

Male. Total length 8.04 ± 0.51 mm; carapace 4.30 ± 0.33 mm long, 3.06 ± 0.20 mm wide (13 specimens measured). Carapace with dark brownish orange lateral areas; rim darker; submarginal bands pale, uneven; median band broad, yellowish orange, enclosing small paired dark streaks. Chelicerae dark reddish brown; promargin and retromargin each with 3 teeth. Sternum yellowish orange. Legs reddish brown or reddish orange, lacking dark rings; tibia I with 2 unusually long retroventral macrosetae (Fig. 116). Abdomen dull reddish brown, mottled with black, lacking heart mark and chevrons; venter dull reddish or dull yellowish. Embolus broad, curved, truncate; intromittent part short, hair-like; median apophysis oblique, with ventral spur arising beyond base (Fig. 115).

Female. Total length 9.25 ± 1.34 mm; carapace 4.54 ± 0.15 mm long, 3.21 ± 0.22 mm wide (14 specimens measured). Coloration essentially as in male but femora of legs sometimes with faint dark rings; tibia I with retroventral macrosetae not noticeably elongated. Epigynum with plate; setae erect, black, in patch anterior to plate; median septum slender, flat; ends of transverse piece angled far anteriorly (Fig. 113). Spermathecae large, rounded (Fig. 114).



Figs. 113–117. Structures of *Varacosa shenandoa*. 113, epigynum, ventral view; 114, spermathecae, dorsal view; 115, 117, palpus of male: 115, ventral view; 117, retrolateral view. 116, tibia I of male, ventral view. *e*, embolus; *ma*, median apophysis; *ms*, median septum; *term*, terminal apophysis.

Comments. Specimens of *V. shenandoa* are distinguished by the following characteristics: median apophysis oblique; ventral spur of median apophysis positioned beyond its base; median septum with posterior piece angled; and tibia I of males with unusually long retroventral macrosetae.

Range. Northern Illinois to southern Quebec, south to Texas and northern Florida.

Biology. Barnes (1953) found mature specimens of *V. shenandoa* in dune grass at Beaufort, N.C., from November to March, although females have been collected elsewhere in May and July as well as in winter (Brady 1979). Several of the winter collections were from buildings.

Genus *Pardosa* C.L. Koch

Spiders of the genus *Pardosa* are small to medium-sized. Because of their relatively long, slender legs, they are sometimes called thin-legged wolf spiders. The body is carried high, and this helps them to pursue prey in open, often grassy or stony ground. Many are characteristic of marshes and fields, tundra and talus, and open conifer forests. The egg sacs of these spiders are distinctively pill-shaped and often bluish or greenish.

Description. Total length 3.8–10.7 mm. Carapace (Figs. 175, 183) usually rather high and narrow, usually vertical at sides anteriorly, convex dorsally in eye area, and usually dark with pale median and submarginal bands. Anterior row of eyes distinctly shorter than middle row and usually somewhat procurved; anterior median eyes somewhat larger than anterior lateral eyes and closer to them than to each other. Chelicerae long, tapered, often setaceous, pale or dark, usually with 2 or 3 promarginal teeth and 3 (rarely 2) retromarginal teeth. Sternum pale to dark. Legs moderately long and slender, pale to dark; scopulae usually sparse; setae sparse; femur I with 3 dorsal macrosetae and 2 prolaterals, the latter situated near each other toward the tip of the segment; tibia I with 2 dorsal bristles (rarely 2 normal macrosetae), 1 or 2 prolateral macrosetae, 1 or 2 retrolaterals, 3 (rarely more) pairs of ventral macrosetae; basitarsus I with a dorsal bristle, 2 or 3 prolateral macrosetae, 2 or 3 retrolateral macrosetae, 3 pairs and an unpaired ventral macroseta. Abdomen ovoid, pale or dark; venter various shades of red, gray, or brown. Cymbium of male palpus with 1–3 short stout macrosetae at tip; terminal apophysis usually tooth-like, situated retrolaterodistally or retrolaterobasally on palea, directed toward or arising close to tips of embolus and conductor; embolus short to long, straight, angled, or curved, with tip lying on tip of conductor or in groove along distal margin of tegulum, or both; conductor (Figs. 209, 213, 273) shaft-like, extending along basal margin of palea to retrolateral margin of genital bulb; median apophysis with distal process short to long, usually with short strong basal process. Epigynum (Figs. 119, 219) usually hooded; hood distinct, with 1 or 2 paired cavities; atrium broad and deep; median septum variable, varying in size and shape by species; copulatory openings usually situated at sides of median septum. Copulatory tubes (Figs. 122, 133, 163, 179) short to long, sometimes tortuous or strongly arched;

spermathecae round, bulbous, or club-shaped, usually well separated, often with nodules.

Comments. Members of the genus *Pardosa* are distinguished from those of other lycosid genera by the following characteristics: body small to medium sized; legs moderately long and slender; carapace high and narrow, usually with vertical sides at anterior end; terminal apophysis tooth-like and usually situated retrolaterally on the palea, often closely associated with the tips of the embolus and conductor; conductor shaft-like, lying along the basal margin of the palea; and egg sacs pill-shaped and often bluish or greenish.

Pardosa is one of the largest of spider genera, comprising an estimated 450 species around the world. There are approximately 100 species in North America, of which 46 are represented in Canada and Alaska. Many of these closely resemble each other, and close attention to the diagnostic characters and illustrations is necessary to achieve positive identification.

Key to species groups and to species of *Pardosa*

Males

1. Embolus strongly arched distally near midline of genital bulb (Figs. 118, 121, 125, 128) .... ***sternalis* group** 2

Embolus straight, curved, or sinuous, not strongly arched distally near midline of genital bulb (Figs. 132, 164, 169) 4

2(1). Cymbium basally reddish brown to black, distally yellowish (Fig. 123). Spider occurring east of Rocky Mountains (in Canada, Map 24, stars) .... ***sternalis* (Thorell)** (p. 123)

Cymbium basally and distally blackish (Figs. 126, 131). Spider occurring in Rocky Mountains or farther west (Map 24, circles and triangles) 3

3(2). Tarsus I swollen, paler than remaining leg tarsi. Palpal femur and patella blackish (Fig. 126) .... ***vancouveri* Emerton** (p. 126)

Tarsus I not swollen, not paler than remaining leg tarsi. Palpal femur and patella yellowish (Fig. 131) .... ***altamontis* Chamberlin & Ivie** (p. 127)

4(1). Terminal apophysis long, slender, somewhat spear-shaped, arising distally on palea and extending over tip of embolus (Figs. 135, 164). Tegulum strongly protruding ventrally (Fig. 136) 5

Terminal apophysis shorter, stouter, not spear-shaped, usually arising near tip of embolus. Tegulum not strongly protruding ventrally 10

5(4). Median apophysis with distal process slender and directed retrolaterodistally (Figs. 132, 141) .... ***nigra*** **group** 6

Median apophysis with distal process broader, directed retrolaterally (Fig. 162) ....***ferruginea*** **group** ....***beringiana*** **Dondale & Redner** (p. 142)

6(5). Embolus tip helical, twisted, or flattened (Figs. 132, 141, 144) 7

Embolus tip hair-like, evenly tapered to tip 9

7(6). Embolus tip helical (Figs. 132, 135) ....***uintana*** **Gertsch** (p. 130)

Embolus tip twisted or flattened (Figs. 141, 144) 8

8(7). Embolus tapered gradually (Figs. 141, 142) .... ***dorsuncata*** **Lowrie & Dondale** (p. 132)

Embolus not tapered gradually but broad and twisted near tip (Fig. 144) ...... ***rainieriana*** **Lowrie & Dondale** (p. 134)

9(6). Median apophysis with distal process truncate and unevenly toothed at tip (Figs. 150, 152). Terminal apophysis tapered and toothed (Figs. 150, 152) .... ***mackenziana*** **(Keyserling)** (p. 137)

Median apophysis with distal process pointed at tip (Figs. 159, 160). Terminal apophysis broader, with or without teeth (Figs. 159, 160) .... ***dorsalis*** **Banks** (p. 139)

10(4). Embolus arched prolaterally at base, exposing sclerite within arch (Figs. 169, 171, 176) .... ***coloradensis*** **group** 11

Embolus not sufficiently arched at base to expose sclerite 13

11(10). Embolus fully exposed in ventral view (Fig. 166). Median apophysis with distal process pointed, with tip hooked (Fig. 166) .... ***metlakatla*** **Emerton** (p. 145)

Embolus partly concealed by median apophysis in ventral view (Figs. 173, 178). Median apophysis with distal process blunt, with tip straight (Figs. 173, 178) 12

12(11). Embolus greatly arched prolaterally in relation to exposed sclerite (Figs. 171, 173) .... ***coloradensis*** **Banks** (p. 147)

Embolus less arched prolaterally in relation to exposed sclerite (Figs. 176, 178) ....***ontariensis*** **Gertsch** (p. 149)

13(10). Median apophysis long, extending beyond retrolateral margin of cymbium (ventral view, Fig. 182) ....***distincta*** **group** ..... ***distincta*** **(Blackwall)** (p. 151)

Median apophysis shorter, not extending to retrolateral margin of cymbium 14

14(13). Median apophysis with distal process long, pointed, hooked (Figs. 187, 195, 210, 221) 15

Median apophysis with distal process shorter (often as broad as long), often rounded, not hooked (Figs. 224, 228, 233, 310, 321, 326, 336) 22

15(14). Palea with stout basal process (Figs. 185, 190). Cheliceral retromargin with 2 teeth .... ***tesquorum*** **group** 16

Palea lacking basal process. Cheliceral retromargin with 3 teeth 17

16(15). Terminal apophysis broad and flat (Figs. 185, 187). Palea with basal process curved (Fig. 185) .... ***tesquorum*** **(Odenwall)** (p. 154)

Terminal apophysis more slender, pointed (Figs. 190, 192). Palea with basal process nearly straight (Fig. 190) ....***mulaiki*** **Gertsch** (p. 156)

17(15). Terminal apophysis arising distally, directed toward tip of embolus; conductor with dark shiny knob near tip (Figs. 199, 204, 209) .... ***milvina*** **group** 18

Terminal apophysis arising near tip of embolus; conductor lacking dark shiny knob 20

18(17). Palpal patella covered dorsally with white setae (Fig. 200). Conductor sinuous along basal margin (Fig. 199) .... ***saxatilis*** **(Hentz)** (p. 159)

Palpal patella covered with dark setae (although scattered white setae may be present). Conductor with single curve along basal margin (Figs. 204, 209) 19

19(18). Terminal apophysis large, extending basally to or beyond tip of embolus (Fig. 209) ....***littoralis*** **Banks** (p. 162)

Terminal apophysis smaller, extending short distance basally (Fig. 204) .... ***milvina*** **(Hentz)** (p. 165)

20(17). Median apophysis with distal process that is more than twice as long as basal process (Figs. 210, 214) .... ***lapponica*** **group** 21

Median apophysis with distal process that is less than twice as long as basal process (Fig. 221) .... ***atrata* group** .... ***fuscula* (Thorell)** (p. 171)

21(20). Terminal apophysis rather short, tapered (ventral view, Fig. 213) .... ***lapponica* (Thorell)** (p. 167)

Terminal apophysis longer, finger-like (Fig. 218) .... ***concinna* (Thorell)** (p. 169)

22(14). Tibiae I and II each with 5 or 6 pairs of ventral macrosetae.. .... ***solituda* group** ..... ***solituda* Levi & Levi** (p. 175)

Tibiae I and II each with 3 pairs of ventral macrosetae 23

23(22). Median apophysis with distal process large and somewhat triangular (Fig. 228) .... ***monticola* group** .... ***palustris* (Linnaeus)** (p. 178)

Median apophysis with distal process smaller, not triangular 24

24(23). Median apophysis with distal process equal to or less than basal process in length (Figs. 233, 242). Terminal apophysis long and finger-like (Figs. 240, 243) ... ***modica* group** 25

Median apophysis with distal process longer than basal process (Figs. 310, 321, 326, 336). Terminal apophysis shorter, not finger-like 39

25(24). Carapace with submarginal bands unbroken (Figs. 245, 251, 258, 271) 26

Carapace with submarginal bands entirely lacking or represented by series of spots (Figs. 289, 305) 34

26(25). Embolus with tip appearing fine and hair-like in ventral view (Figs. 235, 240, 243, 249, 255) 27

Embolus with tip flattened, twisted, or spoon-shaped in ventral view (Figs. 263, 268, 273, 277) 31

27(26). Embolus with tip hyaline, rectangular (distal view, Fig. 236) .... ***anomala* Gertsch** (p. 180)

Embolus with tip not hyaline, not rectangular 28

28(27). Embolus strongly curved toward tip (Figs. 238, 240) .... ***sodalis* Holm** (p. 183)

Embolus straight toward tip (Figs. 243, 249) 29

29(28). Terminal apophysis with stout basal process (Fig. 243) .... ***furcifera* (Thorell)** (p. 185)

Terminal apophysis without basal process (Figs. 249, 255) 30

30(29). Conductor with tip folded (Fig. 249). Spider found in stony habitats in the east (Map 44, triangles) .... ***labradorensis*** **(Thorell)** (p. 187)

Conductor with curved process at tip (Fig. 255). Spider widespread in marshes, meadows, and similar habitats (Map 44, circles) .... ***modica*** **(Blackwall)** (p. 188)

31(26). Embolus broad throughout its length, broadly truncate at tip (Figs. 260, 263). Terminal apophysis large, strongly hooked (Figs. 260, 263). Median apophysis with basal process longer than distal process (Fig. 260) .... ***glacialis*** **(Thorell)** (p. 190)

Embolus not broad throughout its length, not broadly truncate at tip. Terminal apophysis smaller, slightly hooked. Median apophysis with basal process approximately as long as distal process 32

32(31). Terminal apophysis minute (Fig. 273) .... ***algens*** **(Kulczyński)** (p. 194)

Terminal apophysis larger, finger-like (Figs. 268, 277) 33

33(32). Palea lacking stout pointed process on base; conductor rounded at tip (Fig. 268) .... ***podhorskii*** **(Kulczyński)** (p. 195)

Palea with stout pointed process on base; conductor with pointed process at tip (Fig. 277) .... ***tetonensis*** **Gertsch** (p. 198)

34(25). Embolus with tip fine and hair-like (Figs. 281, 285) 35

Embolus with tip flattened, twisted, or otherwise modified (Figs. 291, 294, 298, 303) 36

35(34). Carapace width 2.70 mm or more. Conductor with hooked point (Fig. 281) .... ***sinistra*** **(Thorell)** (p. 199)

Carapace width 2.60 mm or less. Conductor without hooked point (Fig. 285) .... ***wyuta*** **Gertsch** (p. 202)

36(34). Conductor divided at tip, with one part curved (Figs. 291, 298) 37

Conductor not divided at tip (Figs. 294, 303) 38

37(36). Conductor broad at tip, not tapered (ventral view, Fig. 291). Embolus broad (distal view, Fig. 286). Spider occurring from Alaska and northern British Columbia to northern

Appalachian Mountains (Map 50) .... ***albomaculata*** **Emerton** (p. 203)

Conductor narrower at tip, tapered (ventral view, Fig. 298). Embolus narrower (distal view, Fig. 296*a*). Spider occurring in southeast Alaska, British Columbia, and Washington (Map 52) .... ***lowriei*** **Kronestedt** (p. 208)

38(36). Embolus broad throughout its length; tip truncate (Figs. 292, 294) .... ***bucklei*** **Kronestedt** (p. 205)

Embolus strongly tapered in basal half (Figs. 301–303) .... ***dromaea*** **(Thorell) and *groenlandica* (Thorell)** (pp. 209, 212)

39(24). Median apophysis with single process; process directed retrolaterally (Figs. 310, 315) ...... ***lapidicina*** **group** 40

Median apophysis with both distal and basal processes; basal process directed basally (Figs. 321, 326, 336) 41

40(39). Embolus short (Figs. 315, 316). Carapace usually uniformly dark (Fig. 314). Spider occurring in eastern Canada and eastern United States (Map 55, circles) .... ***lapidicina*** **Emerton** (p. 217)

Embolus longer (Figs. 310, 311). Carapace usually with distinct light and dark areas. Spider occurring in central and western Canada and western United States (Map 55, squares) .... ***steva*** **Lowrie & Gertsch** (p. 215)

41(39). Palea with large hooked distal process (Fig. 321). Terminal apophysis with 2 teeth (Fig. 317) .... ***moesta*** **group** .... ***moesta*** **Banks** (p. 219)

Palea with small distal process or none. Terminal apophysis with 1 tooth (Fig. 334) 42

42(41). Conductor thin and hyaline at tip (Fig. 334) .... ***xerampelina*** **group** 43

Conductor thick and dark at tip (Fig. 323) .... ***saltuaria*** **group** ..... ***hyperborea*** **(Thorell)** (p. 229)

43(42). Median apophysis small, not concealing embolus (ventral view, Fig. 330), with large basal process (nearly as wide as main body of median apophysis, Fig. 330) .... ***diuturna*** **Fox** (p. 224)

Median apophysis larger, largely concealing embolus (ventral view, Figs. 336, 340), with smaller basal process 44

44(43). Median apophysis elongate (Fig. 336) .... ***xerampelina*** **(Keyserling)** (p. 225)

Median apophysis relatively short and broad (Fig. 340) .... ***nordicolens*** **Chamberlin & Ivie** (p. 228)

Key to species groups and to species of *Pardosa*

Females

1. Epigynal hood with single cavity (Fig. 119) 2

Epigynal hood with paired cavities (Fig. 219); cavities sometimes indistinct (Figs. 172, 177, 282, 320) 18

2(1). Median septum distinctly raised above surrounding integument, flask-shaped (Fig. 181) .... ***distincta*** **group** .... ***distincta*** **(Blackwall)** (p. 151)

Median septum not raised or flask-shaped (Figs. 124, 134) 3

3(2). Median septum diamond-shaped (Fig. 165) .... ***ferruginea*** **group** .... ***beringiana*** **Dondale & Redner** (p. 142)

Median septum variously shaped, not diamond-shaped 4

4(3). Atrium broad, rounded at anterior end; hood indistinct (Figs. 309, 313) .... ***lapidicina*** **group** 5

Atrium narrowed, usually not rounded at anterior end; hood distinct, often prominent (Figs. 119, 134, 196) 6

5(4). Copulatory tube with distal part oblique; spermathecae usually nodular, irregular in outline (Fig. 312). Carapace and abdomen usually uniformly dark (Fig. 314). Spider occurring in eastern Canada and eastern United States (Map 55, circles) .... ***lapidicina*** **Emerton** (p. 217)

Copulatory tube with distal part essentially transverse; spermathecae smooth, regular in outline (Fig. 308). Carapace and abdomen with light and dark pattern. Spider occurring in western Canada and western United States (Map 55, squares) .... ***steva*** **Lowrie & Gertsch** (p. 215)

6(4). Atrium fully occupied by median septum (Figs. 134, 149) .... ***nigra*** **group** 7

Atrium not fully occupied by median septum, partly visible at sides of septum (Figs. 119, 196, 212) 11

7(6). Epigynum with lateral swellings converging posteriorly (Fig. 134). Spermathecae elongate–ovoid, distinctly more than twice as long as wide (Fig. 133) .... ***uintana* Gertsch** (p. 130)

Epigynum with lateral swellings parallel or diverging posteriorly (Figs. 138, 145). Spermathecae ovoid or rounded, less than twice as long as wide 8

8(7). Epigynum with lateral swellings approximately parallel (Fig. 145). Carapace blackish with few pale indistinct spots .... ***rainieriana* Lowrie & Dondale** (p. 134)

Epigynum with lateral swellings diverging posteriorly (Figs. 138, 149). Carapace brownish, with pale median and submarginal bands 9

9(8). Copulatory tubes broad, not looped (posterior view, Fig. 140) .... ***dorsuncata* Lowrie & Dondale** (p. 132)

Copulatory tubes slender, looped (posterior view, Fig. 156) 10

10(9). Epigynum with lateral swellings large, extending far anterior of posterior expanded part of median septum (Figs. 149, 153) .... ***mackenziana* (Keyserling)** (p. 137)

Epigynum with lateral swellings smaller, hardly extending anterior of posterior expanded part of median septum (Figs. 154, 155) .... ***dorsalis* Banks** (p. 139)

11(6). Atrium with lateral margins distinct; median septum flat (Figs. 119, 212) 14

Atrium with lateral margins indistinct; median septum raised and thickened at sites of copulatory openings (Figs. 196, 201, 207) .... ***milvina* group** 12

12(11). Median septum extending anteriorly nearly to level of hood (Fig. 207) .... ***littoralis* Banks** (p. 162)

Median septum extending anteriorly only one-half length (or less) of epigynum (Figs. 196, 201) 13

13(12). Epigynal hood defining a raised tapered area at sides (Fig. 196) .... ***saxatilis* (Hentz)** (p. 159)

Epigynal hood defining a depressed untapered area at sides (Fig. 201) .... ***milvina* (Hentz)** (p. 165)

14(11). Atrium expanded only in posterior one-third of epigynum (Figs. 119, 124, 129) .... ***sternalis* group** 15

Atrium expanded near mid length of epigynum (Figs. 212, 216) .... ***lapponica* group** 17

15(14). **Median septum with posterior part as wide as or wider than each cavity lateral to it (Figs. 124, 127) (ratio of septum width to cavity width 1.07 or more). Spider occurring in western British Columbia (Map 24) .... *vancouveri* Emerton (p. 126)**

Median septum with posterior part usually narrower than each cavity (ratio of septum width to cavity width 0.29–1.20) (Figs. 119, 129). Spider occurring in interior British Columbia and eastward 16

16(15). **Spider occurring east of Rocky Mountains (in Canada, Map 24). Ratio of septum width to cavity width 0.29–0.71 (see Fig. 119) .... *sternalis* (Thorell) (p. 123)**

Spider occurring in Rocky Mountains (in Canada, Map 24). Ratio of septal width to cavity width 0.53–1.20 (Fig. 129) ....*altamontis* Chamberlin & Ivie (p. 127)

17(14). **Median septum usually less than 0.60 mm in length (Fig. 212) ....*lapponica* (Thorell) (p. 167)**

Median septum greater than 0.60 mm in length (Fig. 216) ....*concinna* (Thorell) (p. 169)

18(1). **Median septum broader anteriorly than posteriorly (Figs. 327, 338, 341). Copulatory tubes with curl at base (Figs. 329, 335, 342) .... *xerampelina* group 19**

Median septum not broader anteriorly than posteriorly (Figs. 172, 225, 231, 234). Copulatory tubes without curl at base 21

19(18). **Hood cavities deep, directed mesally (Figs. 327, 329, 331, 332).. *diuturna* Fox (p. 224)**

Hood cavities shallow, not directed mesally (Figs. 335, 338, 341, 342) 20

20(19). **Median septum constricted anteriorly (Fig. 341) .... *nordicolens* Chamberlin & Ivie (p. 228)**

Median septum not constricted anteriorly (Fig. 338) .... *xerampelina* (Keyserling) (p. 225)

21(18). **Median septum massive, flat; hood cavities well separated (Figs. 231, 325) 22**

Median septum more slender (at least anteriorly); hood cavities usually narrrowly separated (Figs. 167, 172, 320) 23

22(21). Median septum angular posteriorly, not excavated at sides (Fig. 231) .... **_monticola_ group** .... **_palustris_ (Linnaeus)** (p. 178)

Median septum more rounded posteriorly, excavated at sides (Fig. 325) .... **_saltuaria_ group** .... **_hyperborea_ (Thorell)** (p. 229)

23(21). Epigynal hood with cavities widely separated (Fig. 320) .... **_moesta_ group** ..... **_moesta_ Banks** (p. 219)

Epigynal hood with cavities narrowly separated or hood absent (Figs. 172, 219) 24

24(23). Copulatory tubes tortuous (Figs. 170, 174, 179). Epigynal hood indistinct or absent (Figs. 167, 172, 177) .... **_coloradensis_ group** 25

Copulatory tubes curved or arched, not tortuous (Figs. 189, 220, 237). Epigynal hood usually distinct 27

25(24). Median septum nearly as long as epigynal plate (Fig. 167) .... **_metlakatla_ Emerton** (p. 145)

Median septum restricted to posterior end of epigynal plate (Figs. 172, 177) 26

26(25). Atrium extending more anteriorly than median septum (Fig. 172) .... **_coloradensis_ Banks** (p. 147)

Atrium not extending more anteriorly than median septum (Fig. 177) .... **_ontariensis_ Gertsch** (p. 149)

27(24). Tibiae I and II each with 5 or 6 pairs of ventral macrosetae .... **_solituda_ group** .... **_solituda_ Levi & Levi** (p. 175)

Tibiae I and II each with 3 pairs of ventral macrosetae ... 28

28(27). Atrium abruptly widening at level of hood (Fig. 219) .... **_atrata_ group** ..... **_fuscula_ (Thorell)** (p. 171)

Atrium gradually widening from point posterior to hood (Figs. 186, 234, 244) 29

29(28). Cheliceral retromargin with 2 teeth .... **_tesquorum_ group** 30

Cheliceral retromargin with 3 teeth ... **_modica_ group** ... 31

30(29). Median septum widest at level of copulatory openings and tapered anteriorly. Epigynum with lateral margins deeply indented (Fig. 186) .... **_tesquorum_ (Odenwall)** (p. 154)

Median septum widest at some point posterior to copulatory openings and parallel at sides anteriorly. Epigynum with lateral margins not indented (Fig. 191) .... ***mulaiki* Gertsch** (p. 156)

31(29). Carapace with submarginal bands unbroken (Figs. 245, 251, 258) 32

Carapace with submarginal bands absent or represented by series of spots (Figs. 289, 305) 40

32(31). Median septum slender and ridge-like for most of its length, with abrupt expansion at posterior extremity (Figs. 239, 269) 33

Median septum broader and flatter, with expansion either absent (Fig. 252) or more extensive (although expanded part may be transparent) (Figs. 234, 244, 264) 34

33(32). Median septum with expanded part broad; lateral sclerites well separated (Fig. 269) .... ***algens* (Kulczyński)** (p. 194)

Median septum with expanded part narrower; lateral sclerites touching at midline (Fig. 239) .... ***sodalis* Holm** (p. 183)

34(32). Median septum gradually widening from anterior end to posterior end (Fig. 244) .... ***furcifera* (Thorell)** (p. 185)

Median septum unevenly widening from anterior end to posterior end (Figs. 247, 252, 259, 264) 35

35(34). Median septum with paired socket-like cavities near mid length (Fig. 264) .... ***podhorskii* (Kulczyński)** (p. 195)

Median septum lacking paired socket-like cavities 36

36(35). Median septum broadly expanded in posterior half (Figs. 234, 256, 257) 37

Median septum not broadly expanded in posterior half (Figs. 247, 252, 274) 38

37(36). Median septum with fold at posterior end (Fig. 234). Spider occurring in southern British Columbia, southern Alberta, and southward (Map 41) .... ***anomala* Gertsch** (p. 180)

Median septum lacking fold at posterior end (Figs. 256, 257, 259, 261). Spider occurring in Arctic region of Alaska and Canada (Map 45) .... ***glacialis* (Thorell)** (p. 190)

38(36). Atrium with cavity sclerites large; median septum somewhat expanded near middle (Fig. 252) .... ***modica* (Blackwall)** (p. 188)

Atrium with cavity sclerites small; median septum moderately or greatly expanded near middle (Figs. 247, 274) 39

39(38). Median septum greatly expanded near middle (Fig. 247) .... ***labradorensis*** **(Thorell)** (p. 187)

Median septum moderately expanded near middle (Fig. 274) .... ***tetonensis*** **Gertsch** (p. 198)

40(31). Hood cavities virtually absent; median septum with anterior part indistinct and formed of 2 low parallel ridges with shallow groove between them (Fig. 282) .... ***wyuta*** **Gertsch** (p. 202)

Hood cavities distinct; median septum with anterior part distinct (Figs. 278, 287, 293) 41

41(40). Median septum rather broad throughout its length, essentially parallel at sides (Fig. 278) ....***sinistra*** **(Thorell)** (p. 199)

Median septum distinctly narrowed anteriorly or at mid length (Figs. 287, 293, 300) 42

42(41). Atrium with cavity sclerites extending anterolaterally (Fig. 287) .... ***albomaculata*** **(Emerton)** (p. 203)

Atrium with cavity sclerites extending other than anterolaterally (Figs. 293, 297, 300) 43

43(42). Cavity sclerites extending partly across atrium (Figs. 293, 297) 44

Cavity sclerites extending fully across atrium (Figs. 300, 306) ....***dromaea*** .... **(Thorell) and** ***groenlandica*** **(Thorell)** (pp. 209, 212)

44(43). Carapace width 3.10 mm or more .... ***lowriei*** **Kronestedt** (p. 208)

Carapace width 2.95 mm or less ....***bucklei*** **Kronestedt** (p. 205)

Clé des groupes et des espèces de *Pardosa*

Mâles

1. Embolus fortement arqué vers l'extrémité distale près de la ligne médiane du bulbe génital (fig. 118, 121, 125, 128) .... groupe ***sternalis*** 2

Embolus droit, courbé ou sinueux, non fortement arqué vers l'extrémité près de la ligne médiane du bulbe génital (fig. 132, 164, 169) 4

2(1). Cymbium rougeâtre, brun à noir à la base, jaunâtre à l'extrémité (fig. 123). Araignée se trouvant à l'est des montagnes Rocheuses (au Canada, carte 24, étoiles) .... ***sternalis*** **(Thorell)** (p. 123)

Cymbium noirâtre à la base et à l'extrémité (fig. 126, 131). Araignée se trouvant dans les montagnes Rocheuses ou plus loin à l'ouest (carte 24, cercles et triangles) 3

3(2). Tarse I enflé, plus pâle que les autres tarses des pattes. Fémur et patelle du palpe noirâtres (fig. 126) .... ***vancouveri*** **Emerton** (p. 126)

Tarse I non enflé, pas plus pâle que les autres. Fémur et patelle du palpe jaunâtres (fig. 131) .... ***altamontis*** **Chamberlin & Ivie** (p. 127)

4(1). Apophyse terminale longue, grêle, en forme de lance, prenant son origine distalement sur les paléa, s'étendant sur l'extrémité de l'embolus (fig. 135, 164). Tégula faisant fortement saillie ventralement (fig. 136) 5

Apophyse terminale plus courte, épaisse, non en forme de lance, prenant généralement son origine près du point de l'embolus. Tégula ne faisant pas fortement saillie ventralement 10

5(4). Apophyse médiane avec son processus distal grêle et orienté vers l'extrémité du côté arrière (fig. 132, 141) .... groupe ***nigra*** 6

Apophyse médiane avec son processus distal plus large, orienté vers le côté arrière (fig. 162) .... groupe ***ferruginea*** .... ***beringiana*** **Dondale & Redner** (p. 142)

6(5). Extrémité de l'embolus en hélice, ou tordue, ou aplatie (fig. 132, 141, 144) 7

Extrémité de l'embolus en forme de poil, fuselé à l'extrémité d'une façon égale 9

7(6). Extrémité de l'embolus en hélice (fig. 132, 135) .... ***uintana* Gertsch** (p. 130)

Extrémité de l'embolus tordue ou aplatie (fig. 141, 144) 8

8(7). Embolus graduellement fuselé (fig. 141, 142) .... ***dorsuncata* Lowrie & Dondale** (p. 132)

Embolus non graduellement fuselé, mais large et tordu près de l'extrémité (fig. 144) .... ***rainieriana* Lowrie & Dondale** (p. 134)

9(6). Apophyse médiane avec son processus distal tronqué et irrégulièrement denté à l'extrémité (fig. 150, 152); apophyse terminale fuselée, dentée (fig. 150, 152) .... ***mackenziana* (Keyserling)** (p. 137)

Apophyse médiane avec son processus pointu à l'extrémité (fig. 159, 160); apophyse terminale plus large, avec ou sans dents (fig. 159, 160) .... ***dorsalis* Banks** (p. 139)

10(4). Embolus sur le côté arrière arqué à la base, exposant le sclérite en dedans de l'arche (fig. 169, 171, 176) .... **groupe *coloradensis*** 11

Embolus insuffisamment arqué à la base pour exposer le sclérite 13

11(10). Embolus entièrement visible côté ventre (fig. 166). Apophyse médiane avec processus pointu et extrémité en crochet (fig. 166) .... ***metlakatla* Emerton** (p. 145)

Embolus en partie caché par l'apophyse médiane côté ventre (fig. 173, 178). Apophyse médiane avec processus distal émoussé et extrémité droite (fig. 173, 178) 12

12(11). Embolus très arqué côté antérieur par rapport au sclérite exposé (fig. 171, 173) .... ***coloradensis* Banks** (p. 147)

Embolus moins arqué par rapport au sclérite exposé (fig. 176, 178) .... ***ontariensis* Gertsch** (p. 149)

13(10). Apophyse médiane longue, s'étendant plus loin que la marge du côté arrière du cymbium (vue ventrale, fig. 182) ... .**groupe *distincta*** ..... ***distincta* (Blackwall)** (p. 151)

Apophyse médiane plus courte, ne s'étendant pas à la marge du côté arrière du cymbium 14

14(13). Apophyse médiane avec son processus distal long, pointu, en crochet (fig. 187, 195, 210, 221) 15

Apophyse médiane avec son processus distal plus court (souvent aussi large que long), souvent arrondi, non en crochet (fig. 224, 228, 233, 310, 321, 326, 336) 22

15(14). Paléa avec processus basal épais (fig. 185, 190). Marge postérieure des chélicères avec deux dents .... groupe *tesquorum* 16

Paléa sans processus basal. Marge postérieure des chélicères avec trois dents 17

16(15). Apophyse terminale large, aplatie (fig. 185, 187). Paléa avec processus basal courbé (fig. 185) .... *tesquorum* (Odenwall) (p. 154)

Apophyse terminale plus grêle, pointue (fig. 190, 192). Paléa avec processus basal à peu près droit (fig. 190) .... *mulaiki* Gertsch (p. 156)

17(15). Apophyse terminale s'élevant à l'extrémité, orientée vers l'extrémité de l'embolus; conducteur avec protubérance foncée brillante près de l'extrémité (fig. 199, 204, 209) .... groupe *milvina* 18

Apophyse terminale s'élevant près de l'extrémité de l'embolus; conducteur sans protubérance foncée brillante 20

18(17). Patelle du palpe dont la partie dorsale est couverte de poils blancs (fig. 200). Conducteur sinueux le long de la marge basale (fig. 199) .... *saxatilis* (Hentz) (p. 159)

Patelle du palpe couverte de poils foncés (bien que des poils blancs puissent être présents). Conducteur avec une seule courbe le long de la marge basale (fig. 204, 209) 19

19(18). Apophyse terminale grosse, s'étendant à la base jusqu'à ou plus loin que l'extrémité de l'embolus (fig. 209) .... *littoralis* Banks (p. 162)

Apophyse terminale plus petite, s'étendant sur une courte distance vers la base (fig. 204) ......*milvina* (Hentz) (p. 165)

20(17). Apophyse médiane avec processus distal plus de deux fois la longueur du processus basal (fig. 210, 214) .... groupe *lapponica* 21

Apophyse médiane avec processus distal moins de deux fois la longueur du processus basal (fig. 221) .... groupe *atrata* .... *fuscula* (Thorell) (p. 171)

21(20). Apophyse terminale quelque peu courte, fuselée (vue ventrale, fig. 213) .... *lapponica* (Thorell) (p. 167)

Apophyse terminale plus longue, en forme de doigt (fig. 218) .... *concinna* (Thorell) (p. 169)

22(14). Tibias I et II ayant chacun cinq ou six paires de grandes soies ventrales .... **groupe *solituda*** .... ***solituda* Levi & Levi** (p. 175)

Tibias I et II ayant chacun trois paires de grandes soies ventrales 23

23(22). Apophyse médiane ayant un gros processus distal, approximativement triangulaire (fig. 228) .... **groupe *monticola*** ..... ***palustris* (Linnaeus)** (p. 178)

Apophyse médiane ayant un processus distal plus petit, non triangulaire 24

24(23). Apophyse médiane ayant un processus distal égal à ou plus petit que le processus basal en longueur (fig. 233, 242). Apophyse terminale en forme de doigt (fig. 240, 243) .... **groupe *modica*** 25

Apophyse médiane ayant un processus distal plus long que le processus basal (fig. 310, 321, 326, 336). Apophyse terminale plus courte, non en forme de doigt 39

25(24). Partie dorsale de l'encéphalo ayant des bandes submarginales ininterrompues (fig. 245, 251, 258, 271) ... 26

Partie dorsale de l'encéphalo ayant des bandes submarginales formées d'une série de taches, ou sans bandes (fig. 289, 305) 34

26(25). Embolus ayant une extrémité délicate et en forme de poils en vue ventrale (fig. 235, 240, 243, 249, 255) 27

Embolus ayant une extrémité aplatie, ou tordue, ou en forme de cuillère en vue ventrale (fig. 263, 268, 273, 277) 31

27(26). Embolus avec extrémité hyaline, rectangulaire (vue distale, fig. 236) .... ***anomala* Gertsch** (p. 180)

Embolus sans extrémité hyaline, non rectangulaire 28

28(27). Embolus fortement courbé vers l'extrémité (fig. 238, 240) .... ***sodalis* Holm** (p. 183)

Embolus droit vers l'extrémité (fig. 243, 249) 29

29(28). Apophyse terminale avec processus épais à la base (fig. 243) .... ***furcifera* (Thorell)** (p. 185)

Apophyse terminale sans processus à la base (fig. 249, 255) 30

30(29). Conducteur avec extrémité pliée (fig. 249). Araignée se trouvant dans les endroits caillouteux de l'est (carte 44, triangles) .... ***labradorensis* (Thorell)** (p. 187)

Conducteur avec processus courbé à l'extrémité (fig. 255). Araignée répandue dans les marais, les prés et dans des habitats semblables (carte 44, cercles) .... ***modica*** **(Blackwall)** (p. 188)

31(26). Embolus gros sur toute sa longueur, très tronqué à l'extrémité (fig. 260, 263). Apophyse terminale grosse, fortement accrochée (fig. 260, 263). Apophyse médiane avec processus basal plus long que son processus distal (fig. 260) .... ***glacialis*** **(Thorell)** (p. 190)

Embolus petit sur toute sa longueur, non tronqué à l'extrémité. Apophyse terminale plus petite, quelque peu accrochée. Apophyse médiane avec processus basal approximativement aussi long que son processus distal 32

32(31). Apophyse terminale petite (fig. 273) .... ***algens*** **(Kulczyński)** (p. 194)

Apophyse terminale plus grosse, en forme de doigt (fig. 268, 277) 33

33(32). Paléa sans processus pointu à la base; conducteur arrondi à l'extrémité (fig. 268) ...... ***podhorskii*** **(Kulczyński)** (p. 195)

Paléa avec processus pointu à la base; conducteur avec processus pointu à l'extrémité (fig. 277) .... ***tetonensis*** **Gertsch** (p. 198)

34(25). Embolus ayant l'extrémité délicate et en forme de poil (fig. 281, 285) 35

Embolus ayant l'extrémité aplatie, tordue ou toute autre déformation (fig. 291, 294, 298, 303) 36

35(34). Partie dorsale de l'encéphalo large de 2,70 mm ou plus. Conducteur ayant l'extrémité en crochet (fig. 281) .... ***sinistra*** **(Thorell)** (p. 199)

Partie dorsale de l'encéphalo large de 2,60 mm ou moins. Conducteur sans extrémité en crochet (fig. 285) .... ***wyuta*** **Gertsch** (p. 202)

36(34). Conducteur divisé à l'extrémité dont une des parties est courbée (fig. 291, 298) 37

Conducteur non divisé à l'extrémité (fig. 294, 303) 38

37(36). Conducteur large à l'extrémité, non fuselé (vue ventrale, fig. 291). Embolus large (vue distale, fig. 286). Araignée se trouvant en Alaska et dans le nord de la Colombie-Britannique jusque dans le nord des Appalaches (carte 50) .... ***albomaculata*** **Emerton** (p. 203)

Conducteur plus étroit à l'extrémité, fuselé (vue ventrale, fig. 298). Embolus plus étroit (vue distale, fig. 296*a*). Araignée se trouvant dans le sud-est de l'Alaska, en Colombie-Britannique et dans l'état de Washington (carte 52) .... ***lowriei*** **Kronestedt** (p. 208)

38(36). Embolus large sur toute sa longueur; extrémité tronquée (fig. 292, 294) .... ***bucklei*** **Kronestedt** (p. 205)

Embolus fortement fuselé dans la partie basale (fig. 301–303) .... ***dromaea*** **(Thorell) et *groenlandica* (Thorell)** (pp. 209, 212)

39(24). Apophyse médiane avec un seul processus; processus orienté vers le côté arrière (fig. 310, 315) .... **groupe *lapidicina*** 40

Apophyse médiane avec processus distal et basal; processus basal orienté vers la base (fig. 321, 326, 336) 41

40(39). Embolus court (fig. 315, 316). Partie dorsale de l'encéphalo en général uniformément foncée (fig. 314). Araignée se trouvant dans l'est du Canada et l'est des États-Unis (carte 55, cercles) .... ***lapidicina*** **Emerton** (p. 217)

Embolus plus long (fig. 310, 311). Partie dorsale de l'encéphalo généralement ayant des étendues distinctes pâles foncées. Araignée se trouvant dans le centre et l'ouest du Canada, et l'ouest des États-Unis (carte 55, carrés) .... ***steva*** **Lowrie & Gertsch** (p. 215)

41(39). Paléa ayant un gros processus distal et en forme de crochet (fig. 321). Apophyse terminale pourvue de deux dents (fig. 317) .... **groupe *moesta*** ..... ***moesta*** **Banks** (p. 219)

Paléa sans processus distal ou petit. Apophyse terminale pourvue d'une seule dent (fig. 334) 42

42(41). Conducteur mince et hyalin à l'extrémité (fig. 334) .... **groupe *xerampelina*** 43

Conducteur épais et foncé à l'extrémité (fig. 323) .... **groupe *saltuari*** .... ***hyperborea*** **(Thorell)** (p. 229)

43(42). Apophyse médiane petite, ne cachant pas l'embolus (vue ventrale, fig. 330), avec un gros processus basal (à peu près aussi large que la partie principale de l'apophyse médiane, fig. 330) .... ***diuturna*** **Fox** (p. 224)

Apophyse médiane plus grosse, recouvrant la majeure partie de l'embolus (vue ventrale, fig. 336, 340), pourvue d'un processus basal plus petit 44

44(43). Apophyse médiane allongée (fig. 336) .... ***xerampelina*** **(Keyserling)** (p. 225)

Apophyse médiane relativement courte et large (fig. 340) .... ***nordicolens*** **Chamberlin & Ivie** (p. 228)

Clé des groupes et des espèces de *Pardosa*

Femelles

1. Capuchon épigynal à une seule cavité (fig. 119) 2

Capuchon épigynal à deux cavités (fig. 219) qui peuvent être indistinctes (fig. 172, 177, 282, 320) 18

2(1). Septum médian distinctement élevé sur l'intégument environnant, en forme de flacon (fig. 181) .... **groupe *distincta*** ..... ***distincta*** **(Blackwall)** (p. 151)

Septum médian ni élevé ni en forme de flacon (fig. 124, 134) 3

3(2). Septum médian en forme de diamant (fig. 165) .... **groupe *ferruginea*** ....***beringiana*** **Dondale & Redner** (p. 142)

Septum médian de formes diverses, non en forme de diamant 4

4(3). Atrium large, arrondi à l'extrémité antérieure; capuchon indistinct (fig. 309, 313) .... **groupe *lapidicina*** 5

Atrium étroit, généralement non arrondi à l'extrémité antérieure; capuchon distinct, souvent proéminent (fig. 119, 134, 196) 6

5(4). Tube copulatoire dont la partie distale est oblique; spermathèque généralement avec des nodules, en forme irrégulière (fig. 312). Partie dorsale de l'encéphalo et abdomen en général uniformément foncés (fig. 314). Araignée se trouvant dans l'est du Canada et des États-Unis (carte 55, cercles) .... ***lapidicina*** **Emerton** (p. 217)

Tube copulatoire dont la partie distale est entièrement transversale; spermathèque lisse, de forme régulière (fig. 308). Partie dorsale de l'encéphalo et abdomen avec des zones pâles et foncées. Araignée se trouvant dans l'ouest du Canada et des États-Unis (carte 55, carrés) .... ***steva*** **Lowrie & Gertsch** (p. 215)

6(4). Atrium entièrement couvert par le septum médian (fig. 134, 149) .... groupe *nigra* 7

Atrium non entièrement couvert par le septum médian, en partie visible sur les côtés du septum (fig. 119, 196, 212) 11

7(6). Épigyne avec renflements latéraux et convergents vers l'arrière (fig. 134). Spermathèques ovoïdes-allongées, nettement deux fois plus longues que larges (fig. 133) .... ***uintana* Gertsch** (p. 130)

Épigyne avec renflements latéraux parallèles ou divergents vers l'arrière (fig. 138, 145). Spermathèques ovoïdes ou arrondies, moins que deux fois plus longues que larges 8

8(7). Épigyne avec renflements latéraux approximativement parallèles (fig. 145). Partie dorsale de l'encéphalo noirâtre avec des taches pâles indistinctes.. .... ***rainieriana* Lowrie & Dondale** (p. 134)

Épigyne avec renflements latéraux divergents postérieurement (fig. 138, 149). Partie dorsale de l'encéphalo brunâtre avec bandes médianes et submarginales pâles 9

9(8). Tubes copulatoires larges, non bouclés (vue postérieure, fig. 140) .... ***dorsuncata* Lowrie & Dondale** (p. 132)

Tubes copulatoires grêles, bouclés (vue postérieure, fig. 156) 10

10(9). Épigyne pourvue de gros renflements latéraux, qui se prolonge loin en avant jusqu'à la partie postérieure la plus grande du septum médian (fig. 149, 153) .... ***mackenziana* (Keyserling)** (p. 137)

Épigyne pourvue de renflements latéraux plus petits, à peine étendue antérieurement jusqu'à la partie postérieure la plus grande du septum médian (fig. 154, 155) .... ***dorsalis* Banks** (p. 139)

11(6). Atrium pourvu de marges latérales distinctes; septum médian aplati (fig. 119, 212) 14

Atrium pourvu de marges latérales indistinctes; septum médian élevé et épaissi aux ouvertures copulatoires (fig. 196, 201, 207) .... groupe *milvina* 12

12(11). Septum médian se prolongeant antérieurement presque au niveau du capuchon (fig. 207) .... ***littoralis* Banks** (p.162)

Septum médian se prolongeant antérieurement à la moitié (ou moins) de l'épigyne (fig. 196, 201) 13

13(12). Capuchon de l'épigyne déterminant une zone élevée et fuselée sur les côtés (fig. 196) ..... ***saxatilis*** **(Hentz)** (p. 159)

Capuchon de l'épigyne déterminant une zone déprimée et non fuselée sur les côtés (fig. 201) .... ***milvina*** **(Hentz)** (p. 165)

14(11). Atrium s'élargissant seulement au tiers postérieur de l'épigyne (fig. 119, 124, 129) .... **groupe *sternalis*** 15

Atrium s'élargissant près du milieu de l'épigyne (fig. 212, 216) .... **groupe *lapponica*** 17

15(14). Septum médian dont la partie postérieure est aussi large ou plus large que chaque cavité latérale (fig. 124, 127) (rapport de 1,07 ou plus entre la largeur du septum et celle de la cavité). Araignée se trouvant dans l'ouest de la Colombie-Britannique (carte 24) .... ***vancouveri*** **Emerton** (p. 126)

Septum médian dont la partie postérieure est généralement plus étroite que chaque cavité (rapport de 0,29 à 1,20 entre la longueur du septum et celle de la cavité) (fig. 119, 129). Araignée se trouvant à l'intérieur de la Colombie-Britannique et plus à l'est 16

16(15). Araignée se trouvant à l'est des montagnes Rocheuses (au Canada, carte 24). Rapport de 0,29 à 0,71 entre la largeur du septum et celle de la cavité (voir fig. 119) .... ***sternalis*** **(Thorell)** (p. 123)

Araignée se trouvant dans les montagnes Rocheuses (au Canada, carte 24). Rapport de 0,53 à 1,20 entre la largeur du septum et celle de la cavité (fig. 129) .... ***altamontis*** **Chamberlin & Ivie** (p. 127)

17(14). Septum médian dont la longueur est généralement inférieure à 0,60 mm (fig. 212) .... ***lapponica*** **(Thorell)** (p. 167)

Septum médian dont la longueur est supérieure à 0,60 mm (fig. 216) .... ***concinna*** **(Thorell)** (p. 169)

18(1). Septum médian plus large antérieurement que postérieurement (fig. 327, 338, 341). Tubes copulatoires ayant une boucle à leur base (fig. 329, 335, 342) .... **groupe *xerampelina*** 19

Septum médian plus large postérieurement qu'antérieurement (fig. 172, 225, 231, 234). Tubes copulatoires sans boucle à leur base 21

19(18). Capuchon ayant des cavités profondes, orientées vers le milieu (fig. 327, 329, 331, 332) .... ***diuturna*** **Fox** (p. 224)

Capuchon avec cavités superficielles, non orientées vers le milieu (fig. 335, 338, 341, 342) 20

20(19). Septum médian plus étroit antérieurement (fig. 341) ....
.... ***nordicolens*** **Chamberlin & Ivie** (p. 228)

Septum médian pas plus étroit antérieurement (fig. 338) .....
.... ***xerampelina*** **(Keyserling)** (p. 225)

21(18). Septum médian massif, aplati; capuchon ayant des cavités bien séparées (fig. 231, 325) 22

Septum médian plus grêle (au moins antérieurement); capuchon ayant des cavités généralement rapprochées (fig. 167, 172, 320) 23

22(21). Septum médian formant un angle vers l'arrière, non excavé sur les côtés (fig. 231) .... **groupe *monticola***
.... ***palustris*** **(Linnaeus)** (p. 178)

Septum médian plus arrondi postérieurement, excavé sur les côtés (fig. 325) .... **groupe *saltuaria***
.... ***hyperborea*** **(Thorell)** (p. 229)

23(21). Capuchon de l'épigyne ayant des cavités nettement séparées (fig. 320)....................................... **groupe *moesta***
.... ***moesta*** **Banks** (p. 219)

Capuchon de l'épigyne ayant des cavités rapprochées ou sans capuchon (fig. 172, 219) 24

24(23). Tubes copulatoires sinueux (fig. 170, 174, 179). Capuchon de l'épigyne peu visible ou absent (fig. 167, 172, 177) ....
.... **groupe *coloradensis*** 25

Tubes copulatoires courbés ou arqués, non sinueux (fig. 189, 220, 237). Capuchon de l'épigyne généralement visible ... 27

25(24). Septum médian presque aussi long que la plaque de l'épigyne (fig. 167) .... ***metlakatla*** **Emerton** (p. 145)

Septum médian limité à l'extrémité postérieure de la plaque de l'épigyne (fig. 172, 177) 26

26(25). Atrium se prolongeant plus antérieurement que le septum médian (fig. 172) .... ***coloradensis*** **Banks** (p. 147)

Atrium se prolongeant moins antérieurement que le septum médian (fig. 177) .... ***ontariensis*** **Gertsch** (p. 149)

27(24). Tibias I et II pourvus de cinq ou six paires de grandes soies ventrales .... **groupe *solituda***
.... ***solituda*** **Levi & Levi** (p. 175)

Tibias I et II pourvus de trois paires de grandes soies ventrales 28

28(27). Atrium s'élargissant brusquement au niveau du capuchon (fig. 219) ..... **groupe *atrata*** ..... ***fuscula* (Thorell)** (p. 171)

Atrium s'élargissant graduellement de l'extrémité postérieure jusqu'au capuchon (fig. 186, 234, 244) 29

29(28). Chélicères avec deux dents postérieures .... **groupe *tesquorum*** 30

Chélicères avec trois dents postérieures .... **groupe *modica*** 31

30(29). Septum médian dont la largeur atteint son maximum au niveau des orifices copulatoires, fuselé antérieurement. Épigyne ayant des marges latérales profondément découpées (fig. 186) .... ***tesquorum* (Odenwall)** (p. 154)

Septum médian dont la largeur atteint son maximum à un endroit postérieur aux orifices copulatoires; parallèle sur les côtés antérieurement. Épigyne ayant des marges latérales non découpées (fig. 191) .... ***mulaiki* Gertsch** (p. 156)

31(29). Partie dorsale de l'encéphalo ayant des bandes submarginales entières (fig. 245, 251, 258) 32

Partie dorsale de l'encéphalo ayant des bandes submarginales consistant en une série de taches ou sans bandes (fig. 289, 305) 40

32(31). Septum médian grêle et strié sur une bonne partie de sa longueur, brusquement élargi à l'extrémité postérieure (fig. 239, 269) 33

Septum médian plus large et aplati, s'élargissant (la partie qui s'élargit peut être transparente, fig. 234, 244, 264) ou mon (fig. 252) 34

33(32). Septum médian dont une partie large se prolonge; sclérites latéraux nettement séparés (fig. 269) .... ***algens* (Kulczyński)** (p. 194)

Septum médian dont une partie plus étroite se prolonge; sclérites latéraux touchant la ligne médiane (fig. 239) .... ***sodalis* Holm** (p. 183)

34(32). Septum médian graduellement élargi de l'extrémité antérieure à l'extrémité postérieure (fig. 244) .... ***furcifera* (Thorell)** (p. 185)

Septum médian de largeur variable de son extrémité antérieure à son extrémité postérieure (fig. 247, 252, 259, 264) 35

35(34). Septum médian ayant deux alvéoles près de son milieu (fig. 264) .... ***podhorskii*** **(Kulczyński)** (p. 195)

Septum médian sans alvéoles 36

36(35). Septum médian très élargi à la moitié postérieure (fig. 234, 256, 257) 37

Septum médian peu élargi à la moitié postérieure (fig. 247, 252, 274) 38

37(36). Septum médian ayant un pli à son extrémité postérieure (fig. 234). Araignée se trouvant dans le sud de la Colombie-Britannique, le sud de l'Alberta et aux nord des États-Unis (carte 41) .... ***anomala*** **Gertsch** (p. 180)

Septum médian sans pli (fig. 256, 257, 259, 261). Araignée se trouvant dans la région arctique de l'Alaska et du Canada (carte 45) .... ***glacialis*** **(Thorell)** (p. 190)

38(36). Atrium ayant des gros sclérites de cavité; septum médian quelque peu étendu près de son milieu (fig. 252) .... ***modica*** **(Blackwall)** (p. 188)

Atrium ayant des petits sclérites de cavité; septum médian modérément ou grandement étendu près de son milieu (fig. 247, 274) 39

39(38). Septum médian très élargi près de son milieu (fig. 247) .... ***labradorensis*** **(Thorell)** (p. 187)

Septum médian modérément élargi près de son milieu (fig. 274) .... ***tetonensis*** **Gertsch** (p. 198)

40(31). Capuchon presque toujours sans cavités; septum médian ayant une partie antérieure indistincte (constituée de deux stries parallèles basses, celles-ci séparées par un sillon peu profond, fig. 282) .... ***wyuta*** **Gertsch** (p. 202)

Capuchon ayant des cavités distinctes; septum médian avec partie antérieure distincte (fig. 278, 287, 293) 41

41(40). Septum médian large partout, entièrement parallèle sur les côtés (fig. 278) .... ***sinistra*** **(Thorell)** (p. 199)

Septum médian nettement resserré antérieurement ou près de son milieu (fig. 287, 293, 300) 42

42(41). Atrium ayant des sclérites de cavité se prolongeant sur les côtés arrière (fig. 287) .... ***albomaculata*** **Emerton** (p. 203)

Atrium ayant des sclérites de cavité se prolongeant autrement (fig. 293, 297, 300) 43

43(42). Sclérites de cavité se prolongeant partiellement en travers de l'atrium (fig. 293, 297) 44

Sclérites de cavité se prolongeant complètement en travers de l'atrium (fig. 300, 306) ....***dromaea*** **(Thorell)** et ***groenlandica*** **(Thorell)** (pp. 209, 212)

44(43). Partie dorsale de l'encéphalo ayant 3,10 mm de largeur ou plus ....*lowriei* **Kronestedt** (p. 208)

Partie dorsale de l'encéphalo ayant 2,95 mm de largeur ou moins ....*bucklei* **Kronestedt** (p. 205)

The *Pardosa sternalis* group

Description. Total length 4.5–6.9 mm. Carapace dark reddish brown to blackish, with faint pale median and submarginal bands. Sternum and chelicerae reddish brown to black. Legs in males with dark femora with paler tips; femora usually pale with dark rings in females; tarsus I rarely swollen and paler than other tarsi. Abdomen gray, brown, or blackish, often with heart mark and several pairs of pale spots. Palpal segments of male black or yellowish according to species; tibia with numerous long black setae; palea with hood-like process (Figs. 118, 125, 128); terminal apophysis near tips of embolus and conductor; tip of terminal apophysis directed distally (Fig. 121); embolus long, slender, strongly arched (Fig. 121); conductor long, broad, inconspicuous, conforming to contour of embolus; median apophysis with 2 processes; distal process long, stout, expanding to cymbial margin; basal process small (Figs. 118, 125, 128). Epigynum hooded; hood small, with 1 shallow cavity (Figs. 119, 124, 129); median septum slender in anterior two-thirds, wider posteriorly; copulatory openings situated at anterior angles of broad posterior part of median septum; copulatory tubes long, broad, extending first anteriorly then posteriorly (Figs. 119, 124, 129); spermathecae small, dumbbell-shaped (Figs. 120, 122, 130).

Comments. Members of the *P. sternalis* group are distinguished from those of other groups in the genus *Pardosa* by the following characteristics: palea with hood-like process; terminal apophysis with distally directed tip; terminal apophysis situated near tips of embolus and conductor; embolus strongly arched; median apophysis with long stout distal process; epigynal hood having a single shallow cavity; and copulatory tubes long and broad, extending first anteriorly, then posteriorly. Vogel (1970*a*) revised the group. Three species are represented in Canada.

Pardosa sternalis (Thorell)

Figs. 118–121, 123; Map 24

Lycosa sternalis Thorell, 1877:504.

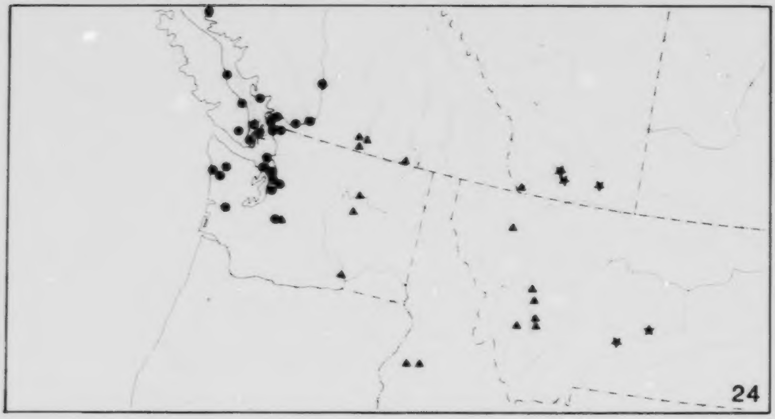
Pardosa sternalis: Banks 1894:51; Chamberlin 1908:185, figs. 7, 9 (pl. 8), 5, 6 (pl. 13); Vogel 1970*a*:8, figs. 1–5, 13–18, 22–27, 37, 47, 51, 80, 82–87.

Lycosa sedyi Strand, 1908:258.

Male. Total length 5.50 ± 0.46 mm; carapace 2.81 ± 0.15 mm long, 2.12 ± 0.13 mm wide (20 specimens measured). Carapace brownish black; median band faint, pale; submarginal bands faint, pale, when developed, sometimes broken into series of spots. Sternum dark reddish brown to black. Chelicerae reddish brown to blackish. Legs with distal segments reddish orange or yellowish orange; femora blackish. Abdomen dark gray or blackish, sometimes with several pairs of yellowish spots along midline; heart mark yellowish if present; venter grayish or black, sometimes with 3 indistinct black longitudinal bands. Palpal segments blackish except patella; patella yellowish or light brownish; tibia hairy; cymbium reddish brown to black on basal half, yellowish on distal half; palea with hood-like process distally (Fig. 118); terminal apophysis with tip directed distally; basal process blunt (Fig. 121); embolus long, slender, strongly arched near middle (Figs. 118, 121), with small hook at tip; conductor broad, rather flat, weakly sclerotized; median apophysis with 2 processes; distal process long, curved; basal process short, stout, or pointed (Fig. 118).

Female. Total length 6.28 ± 0.74 mm; carapace 3.01 ± 0.26 mm long, 2.26 ± 0.15 mm wide (21 specimens measured). Coloration much as in male, but carapace with pale bands more distinct; sternum sometimes with yellowish midstripe or entirely yellowish; leg femora and sometimes tibiae with 3 or 4 faint dark rings; abdomen reddish or dull orange. Epigynum hooded; hood with single shallow cavity; median septum flat and slender in anterior two-thirds, wider posteriorly (ratio of septum width to cavity width averaging 0.49 ± 0.11, sample size 16, range 0.29–0.71; see Fig. 119); copulatory openings situated at anterior angles of broad posterior part of median septum. Copulatory tubes broad, extending first anteriorly then posteriorly; spermathecae small, dumbbell-shaped (Fig. 120).

Comments. Males of *P. sternalis* are distinguished from those of the other members of the *sternalis* group by the following characteristics: tarsus I not swollen or paler than the other leg tarsi (swollen and paler in *P. vancouveri*); palpal patella yellowish; and cymbium dark on basal half and pale on distal half. Females of *P.*



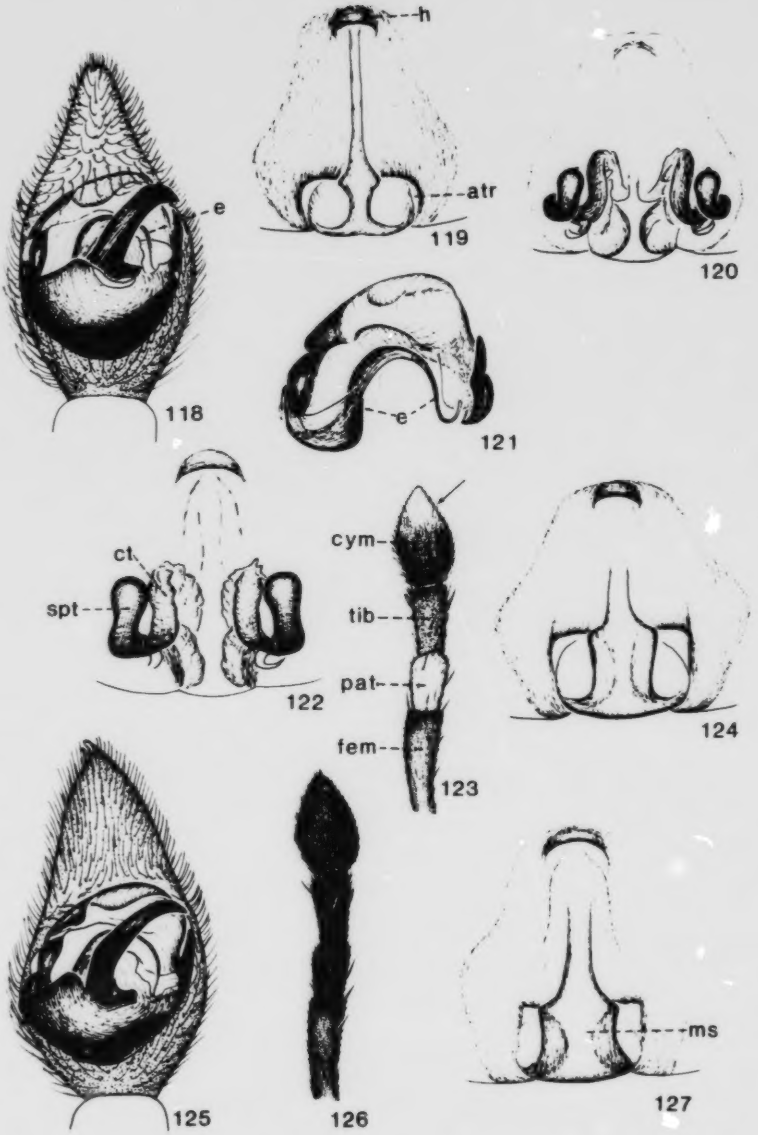
Map 24. Collection localities of *Pardosa sternalis* (★), *P. vancouveri* (●), and *P. altamontis* (▲).

sternalis possess a generally narrower median septum (ratio of septum width to cavity width 0.49 ± 0.11) than females of *P. vancouveri*. The septum in *P. sternalis* is also usually narrower than that in females of *P. altamontis*, but some females cannot be identified positively by this character. Vogel (1970*a*) showed that samples of 24 and 35 females from adjacent populations of *P. sternalis* and *P. altamontis*, respectively, differed by an average of 0.03 mm, which was significant at the 95% confidence level.

Range. Southern Alberta east to Nebraska and Kansas, south to California and northern Mexico.

Biology. McIver (1981) used *P. sternalis* in an experimental evaluation of the precipitin test for predator–prey relationships. Vogel (1970*a*) analyzed variation in certain body characters (total length, carapace proportions, and epigynal length) in *P. sternalis*. One of Vogel's more important findings for taxonomists is that epigynum length does not vary appreciably from one part of the range to another, although body size does. She also speculates on the probable function of the various parts of male and female genitalia in mating.

Adult males have been collected from March to September and adult females from April to September. Egg sacs were recorded in June. The species' principal habitats are the margins of lakes, rivers, creeks, and prairie sloughs. Individuals were found at elevations up to 3670 m. Vogel (1970*b*) studied courtship behavior.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Figs. 118–127. Genitalia of *Pardosa* spp. 118–121, 123, *P. sternalis*. 118, 121, 123, palpus of male: 118, ventral view; 123, dorsal view; 121, apical division, ventral view; 119, epigynum, ventral view; 120, spermathecae, dorsal view. 122, 124–127, *P. vancouveri*. 122, spermathecae, dorsal view; 124, 127, epigynums, ventral view; 125, 126, palpus of male: 125, ventral view; 126, dorsal view. *atr*, atrium; *ct*, copulatory tube; *cym*, cymbium; *e*, embolus; *fem*, femur; *h*, hood; *ms*, median septum; *pat*, patella; *spt*, spermatheca; *tib*, tibia.

Pardosa vancouveri Emerton

Figs. 122, 124–127; Map 24

Pardosa vancouveri Emerton, 1917:269, fig. 20 (1, 2); Vogel 1970*a*:14, figs. 12, 28, 29, 41, 42, 50, 59, 82, 83, 86, 87, 90.

Male. Total length 5.73–6.24 mm; carapace 3.08 ± 0.11 mm long, 2.42 ± 0.10 mm wide (15 specimens measured). Carapace blackish, with faint pale median and submarginal bands. Sternum black. Chelicerae blackish, with pale markings. Legs with blackish femora; distal segments yellowish orange; tibiae somewhat darker dorsally; tarsus I swollen and pale. Abdomen black; heart mark slender, pale; venter blackish. Palpus blackish; femur and tibia conspicuously hairy (Fig. 126); palea with hood-like process at tip; terminal apophysis with tip directed distally and with stout basal process; embolus long, slender, strongly arched at middle, with small curve at tip; conductor long, broad, slightly sclerotized; median apophysis with 2 processes; distal process long, stout, pointed; basal process small, hooked (Fig. 125).

Female. Total length 6.24 ± 0.66 mm; carapace 3.08 ± 0.18 mm long, 2.39 ± 0.20 mm wide (20 specimens measured). Coloration much as in male; carapace with pale bands more distinct; leg femora, tibiae, and basitarsi with 3 or 4 dark rings; tarsus I not swollen or paler than in other legs; abdomen with several pairs of pale spots near midline behind heart mark; venter yellowish orange, with 3 indistinct black longitudinal bands. Epigynum hooded; hood small, with 1 shallow cavity; median septum low, flat, slender, and sinuous in anterior two-thirds, approximately as broad posteriorly as lateral cavity (ratio of septum width to cavity width 1.95 ± 0.80, range 1.07–3.75, sample size 16; see Figs. 124, 127); copulatory openings situated at anterior angles of broad part of median septum. Copulatory tubes broad, extending first anteriorly, then posteriorly; spermathecae dumbbell-shaped, extending anterolaterally; distal swelling sometimes with few small nodules (Fig. 122).

Comments. Individuals of *P. vancouveri* are distinguished from those of the other members of the *sternalis* group by the following characteristics: tarsus I of male swollen and paler than other leg tarsi; palpal segments of male black or blackish; and ratio of septum width to cavity width 1.95 ± 0.80.

Range. Southern British Columbia to southern Oregon.

Biology. Hardman and Turnbull (1974) and Holmberg and Turnbull (1982) used *P. vancouveri* as an experimental predator in laboratory predator–prey systems. Adult males have been collected from March to early July and adult females from March to late August. Egg sacs were recorded from early May to July. The main habitats are grassy fields, meadows, and marshes (including a salt marsh) at low elevations.

Pardosa altamontis Chamberlin & Ivie

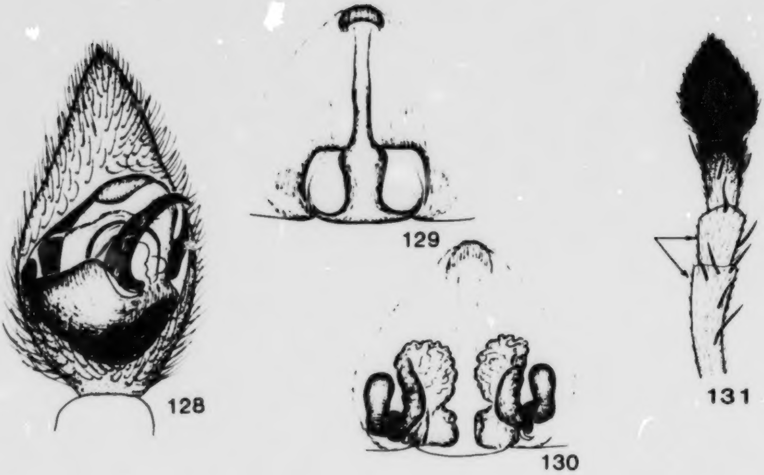
Figs. 128–131; Map 24

Pardosa altamontis Chamberlin and Ivie, 1946:7, fig. 7; Vogel 1970*a*:10, figs. 6, 7, 30, 31, 38, 48, 52, 82, 86, 87, 89.

Male. Total length 5.27 ± 0.79 mm; carapace 2.84 ± 0.33 mm long, 2.07 ± 0.19 mm wide (12 specimens measured). Carapace blackish; median band faint, pale; submarginal bands faint, pale, usually broken into series of spots. Sternum black. Chelicerae black, with pale markings. Legs with femora mainly blackish; distal segments yellowish orange. Abdomen black, with several pairs of small white spots; heart mark (if present) small, pale; venter blackish, sometimes yellowish with 3 bands; bands black, broad, indistinct. Palpus with femora yellowish, marked with black; patellae yellowish, tibiae blackish and hairy; cymbium blackish (Fig. 131); palea projecting and hood-like at tip; terminal apophysis with tip directed distally and with blunt basal process; embolus long, slender, arched strongly distally near middle, with small hook at tip; conductor broad, rather flat, slightly sclerotized; median apophysis with 2 processes; distal process long, curved; basal process short, stout, or pointed (Fig. 128).

Female. Total length 5.86 ± 0.60 mm; carapace 2.75 ± 0.24 mm long, 2.09 ± 0.18 mm wide (20 specimens measured). Coloration much as in male; carapace with pale bands more distinct. Sternum often with pale midstripe anteriorly and with several pale marks at posterior margin. Leg femora, tibiae, and basitarsi often pale with several black rings. Abdomen with pale heart mark and several pairs of yellowish spots posteriorly. Epigynum hooded; hood with 1 shallow cavity; median septum flat and slender in anterior two-thirds, wider posteriorly (ratio of septum width to cavity width 0.79 ± 0.17, range 0.53–1.20, sample size 16; see Fig. 129); copulatory openings at anterior angles of broad posterior part of median septum. Copulatory tubes broad, extending first anteriorly then posteriorly; spermathecae small, dumbbell-shaped (Fig. 130).

Comments. Males of *P. altamontis* are distinguished from those of other members of the *P. sternalis* group by the following characteristics: tarsus I not swollen or not paler than the other leg



Figs. 128–131. Genitalia of *Pardosa altamontis*. 128, 131, palpus of male: 128, ventral view; 131, dorsal view; 129, epigynum, ventral view; 130, spermathecae, dorsal view.

tarsi; palpal segments blackish (except patella, which is yellowish). Females of *P. altamontis* possess a narrower median septum (ratio of septum width to cavity width 0.79 ± 0.17) than females of *P. vancouveri*. The septum is usually wider than in females of *P. sternalis*, based on a sample size of 24–35 individuals (see Vogel 1970*a*), but some specimens cannot be positively identified by this character.

Range. Interior British Columbia and southern Alberta, south to California and Utah.

Biology. Vogel (1970*a*) studied variation in several body and genital measurements in relation to geography and to the presence or absence of *P. sternalis*. Adult males of *P. altamontis* were collected from early May to early October and adult females from late May to September. Egg sacs were recorded from June to August. Individuals have been collected at elevations of 1300–2600 m on cobblestone beaches and beaver meadows and along lake margins.

The *Pardosa nigra* group

Description. Total length 4.7–6.7 mm. Carapace various shades of brown, usually with pale median and submarginal bands, and sometimes entirely dark. Sternum brownish. Legs light brown to dark brown, rarely black; femora and tibiae usually with darker rings. Abdomen mottled light and dark brown.

Male. Palpus (Figs. 132, 137, 143, 150, 159) brown; palea strongly depressed; terminal apophysis long, slender, spear-like, often with minute teeth at tip; terminal apophysis arising distally on palea and extending free over tip of embolus; embolus long, slender or stout, oblique, with tip; tip flattened, twisted, or otherwise modified according to species; conductor long, sinuous, with broad spoon-shaped tip; median apophysis with distal process short to long according to species and with stout basal process; tegulum strongly protruding (Fig. 136).

Female. Epigynum bordered by paired lateral swellings (Figs. 134, 138, 145, 149, 155); hood with 1 shallow cavity; median septum club-shaped; anterior piece of median septum slender, sinuous, widening abruptly into broad angular posterior piece; copulatory tubes broad basally, then slender and curved anteromesally; spermathecae ovoid or elliptical, smooth or with few small nodules (Figs. 133, 139, 146, 148, 157).

Comments. Members of the *P. nigra* group are distinguished from those of other groups in the genus *Pardosa* by the following characteristics: body and legs usually brownish; palea concave retrolaterally; terminal apophysis long, spear-shaped; terminal apophysis arising distally on palea and extending free over tip of embolus; embolus long, oblique, slender or stout; conductor long, sinuous, with spoon-shaped tip; tegulum strongly protruding; epigynum bordered by paired lateral swellings; epigynal hood with single shallow cavity; median septum with slender sinuous anterior piece abruptly widening to broad angular posterior piece; copulatory tubes first broad, then slender, curved anteromesally; and spermathecae ovoid or elliptical. The group was revised by Lowrie and Dondale (1981), and is represented in Canada and Alaska by five species.

Pardosa uintana Gertsch

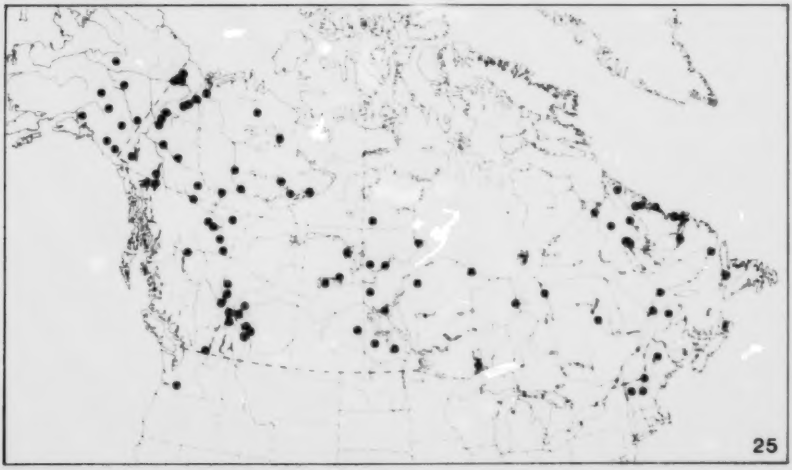
Figs. 132–136; Map 25

Pardosa uintana Gertsch, 1933*a*:27; Lowrie and Dondale 1981:127, figs. 4–9, 13.

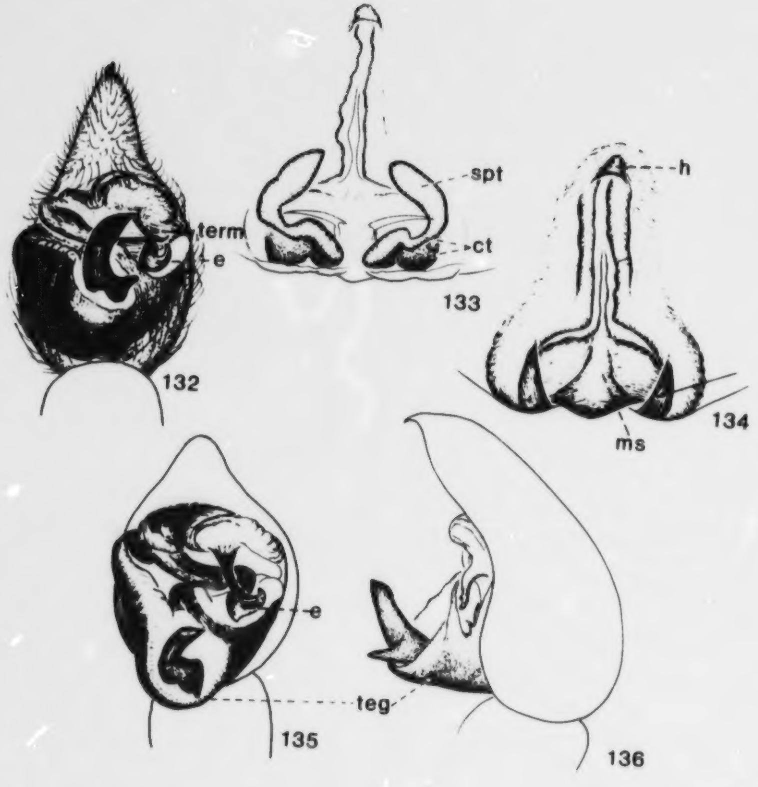
Male. Total length 5.69 ± 0.40 mm; carapace 2.85 ± 0.13 mm long, 2.18 ± 0.13 mm wide (20 specimens measured). Carapace blackish or brownish, with lighter median band. Chelicerae brownish. Sternum dark brownish. Legs dark brown, with indistinct black rings; distal segments somewhat paler. Abdomen dark brown, indistinctly mottled. Terminal apophysis slender, sometimes with few minute teeth toward tip; embolus stout, with tip helical; median apophysis with distal process; process short, slender, curved, pointed, lacking teeth at tip (Fig. 132, 135)

Female. Total length 6.27 ± 0.73 mm; carapace 2.92 ± 0.19 mm long, 2.24 ± 0.09 mm wide (20 specimens measured). Coloration essentially as in male. Epigynum with lateral swellings converging posteriorly (Fig. 134). Spermathecae elongate ovoid, distinctly more than twice as long as wide (Fig. 133).

Comments. Males of *P. uintana* are distinguished by the following characteristics: embolus stout, with helical tip; distal process of median apophysis short. In females, the lateral swellings of epigynum converge posteriorly, and the spermathecae are long (distinctly more than twice as long as wide).



Map 25. Collection localities of *Pardosa uintana*.



Figs. 132–136. Genitalia of *Pardosa uintana*. 132, 135, 136, palpus of male: 132, ventral view; 135, distoventral view; 136, retrolateral view; 133, spermathecae, dorsal view; 134, epigynum, ventral view. *ct*, copulatory tube; *e*, embolus; *h*, hood; *ms*, median septum; *spt*, spermatheca; *teg*, tegulum; *term*, terminal apophysis.

Range. Alaska to Newfoundland, south to Utah, Colorado, and northern New England.

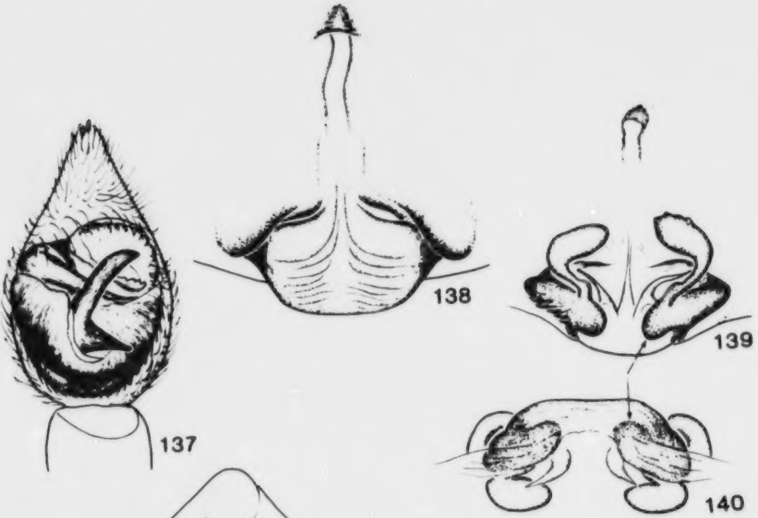
Biology. Specimens of *P. uintana* have been collected commonly in spruce–fir forests at upper elevations in the Rocky Mountains and near the Pacific coast. They were also collected at sea level in northern latitudes, and in sphagnum bogs or in lichen mats. A few were taken on alpine tundra. Males were collected from May to July, females from June to October, and egg sacs from June to August and in October.

Pardosa dorsuncata Lowrie & Dondale

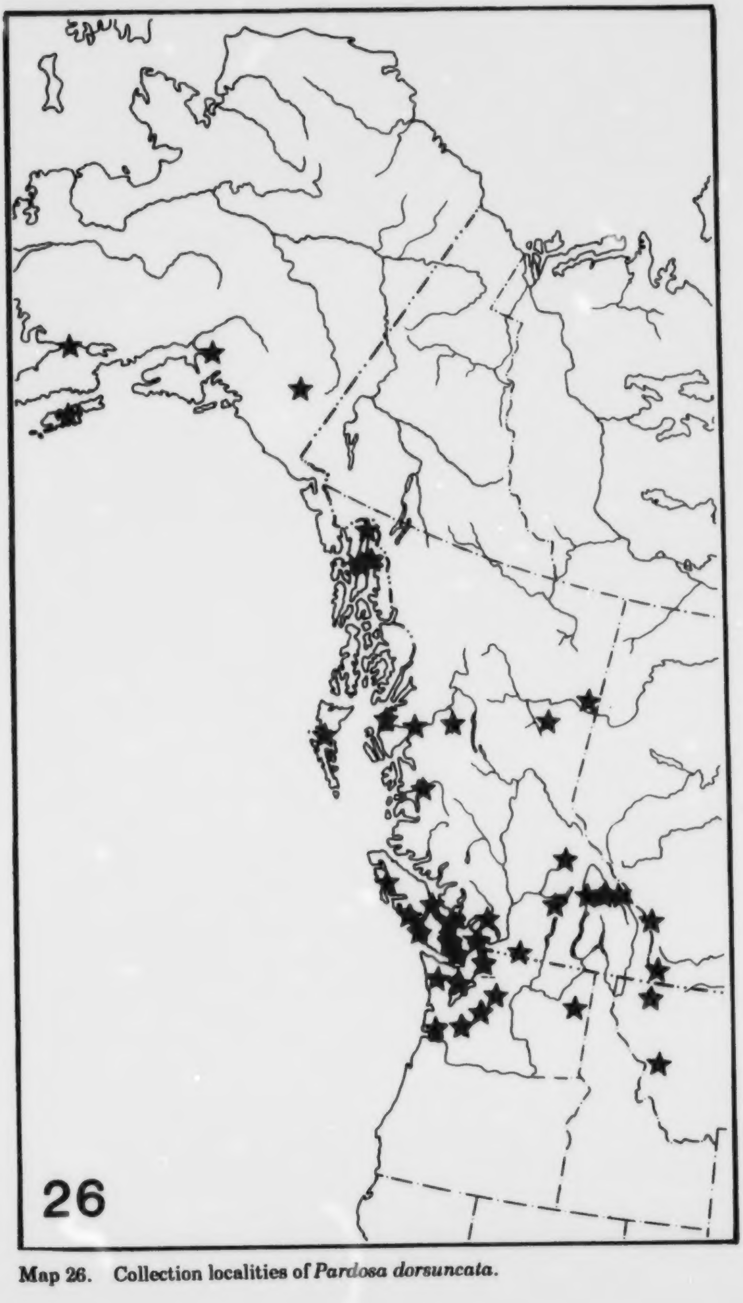
Figs. 137–142; Map 26

Pardosa dorsuncata Lowrie and Dondale, 1981:130, figs. 10–12, 14–20.

Male. Total length 5.42 ± 0.40 mm; carapace 2.74 ± 0.24 mm long, 2.16 ± 0.13 mm wide (20 specimens measured). Carapace dark brown, with lighter median band; eye area black. Chelicerae brownish. Sternum dark brownish. Legs mottled light brown and dark brown; femora and tibiae with darker rings. Terminal apophysis slender, with minute teeth toward tip on prolateral side



Figs. 137–142. Genitalia of *Pardosa dorsuncata*. 137, 141, 142, palpus of male: 137, ventral view; 141, distoventral view; 142, apical division, basal view; 138, 140, epigynums: 138, ventral view; 140, basal view; 139, spermathecae, dorsal view. *con*, conductor; *e*, embolus; *ma*, median apophysis; *term*, terminal apophysis.



Map 26. Collection localities of *Pardosa dorsuncata*.

(Figs. 137, 141); embolus flattened, gradually tapered to tip, not hair-like (Fig. 141); median apophysis with distal process; distal process long, broad throughout its length, usually roughened, with patch of minute teeth at tip (Fig. 137).

Female. Total length 6.37 ± 0.58 mm; carapace 2.98 ± 0.19 mm long, 2.30 ± 0.18 mm wide (20 specimens measured). Coloration essentially as in male. Epigynum with lateral swellings diverging posteriorly (Fig. 138); median septum rather broad posteriorly (approximately 1.5 times as wide as long). Copulatory tubes broad, not looped; spermathecae ovoid, oblique (Fig. 139).

Comments. Specimens of *P. dorsuncata* are distinguished by the following characteristics: embolus flattened and tapered; epigynal swellings posteriorly divergent; posterior part of the median septum broad (approximately 1.5 times as broad as long); and copulatory tubes broad.

Range. Southern Alaska to Alberta, south to northern California and Arizona.

Biology. Specimens of *P. dorsuncata* have been collected at lower elevations in the conifer-covered mountains of the west. Males have been collected from April to August, females from May to September, and egg sacs from June to August.

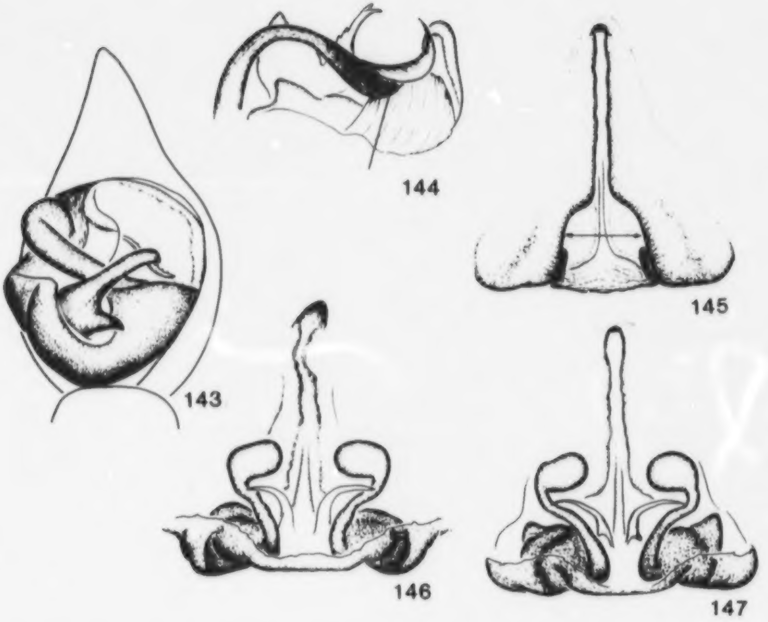
Pardosa rainieriana Lowrie & Dondale

Figs. 143–147; Map 27

Pardosa rainieriana Lowrie and Dondale, 1981:132, figs. 33–37.

Male. Total length 6.90–7.14 mm; carapace 3.61–3.62 mm long, 2.97–3.00 mm wide (2 specimens measured). Chelicerae brownish. Sternum dark brownish. Legs dark brown, with indistinct darker rings. Abdomen dark brown. Terminal apophysis slender, expanded and toothed at tip (Figs. 143, 144); embolus flattened, twisted, pointed at tip (Fig. 144); median apophysis with short, broad distal process (Fig. 143).

Female. Total length 7.67–9.37 mm; carapace 3.57–4.22 mm long, 2.95–3.36 mm wide (7 specimens measured). Coloration essentially as in male. Epigynum with lateral swellings approximately parallel (Fig. 145); median septum with posterior part rather broad (approximately as broad as long). Spermathecae ovoid or elliptical (Figs. 146, 147).

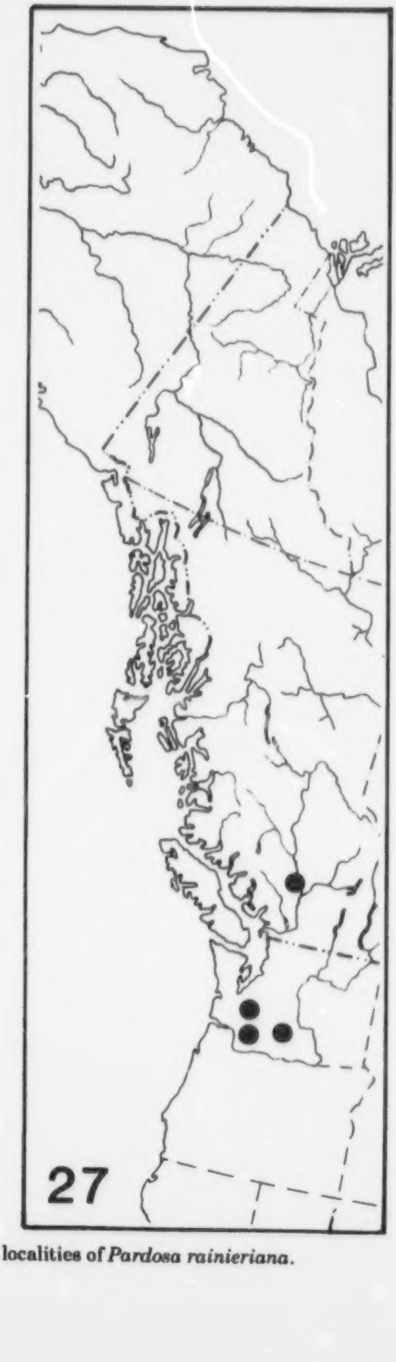


Figs. 143–147. Genitalia of *Pardosa rainieriana*. 143, 144, palpus of male: 143, ventral view; 144, apical division, basal view; 145, epigynum, ventral view; 146, 147, spermathecae, dorsal view.

Comments. Specimens of *P. rainieriana* are distinguished by the following characteristics: body size large; body and legs dark brown to black; embolus untapered, with distal part broad and twisted; epigynum with parallel lateral swellings; and spermathecae ovoid or rounded.

Range. Southern interior of British Columbia to interior Oregon.

Biology. The only recorded habitat is on Mount McLean, B.C., at 600 m. A male was collected in July and a female in August.



Map 27. Collection localities of *Pardosa rainieriana*.

Pardosa mackenziana (Keyserling)

Figs. 148–153; Map 28

Lycosa mackenziana Keyserling, 1877:621, fig. 7 (pl. 1).

Pardosa mackenziana: Chamberlin 1908:207, figs. 5, 6 (pl. 15); Kaston 1948:338, figs. 1133–1136 (pl. 58); Lowrie and Dondale 1981:134, figs. 3, 38–47.

Pardosa metlakatloides Schenkel, 1951:27, fig. 36.

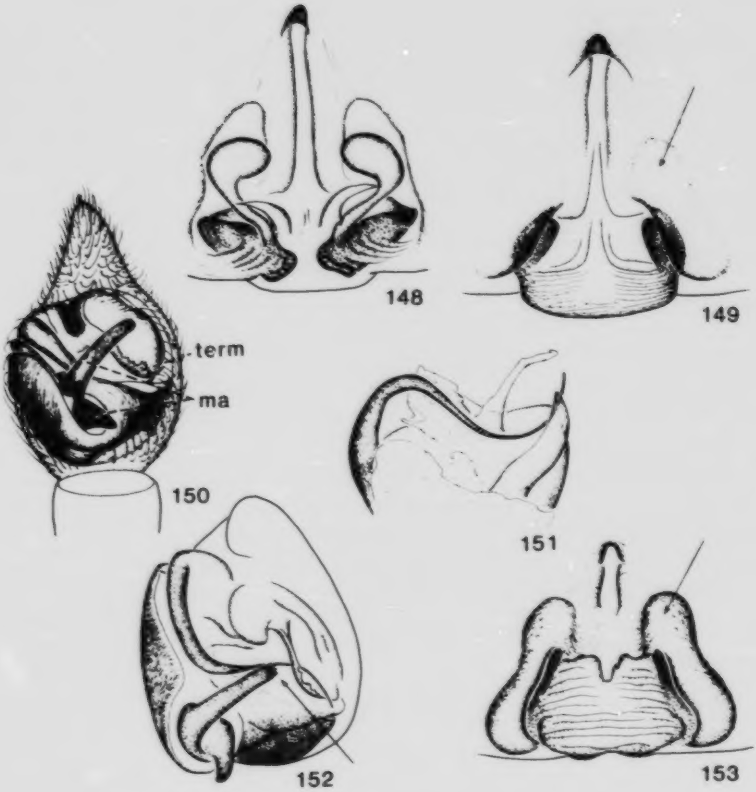
Male. Total length 5.91 ± 0.38 mm; carapace 2.97 ± 0.17 mm long, 2.36 ± 0.17 mm wide (20 specimens measured). Carapace brown; median band lighter brown; marginal bands indistinct, if present. Chelicerae brownish. Sternum dark brown. Legs brown, with broad black rings. Terminal apophysis slender, with several minute teeth toward tip; embolus hair-like, curved in 2 planes; median apophysis with distal process; distal process rather long, slender, uniform in width, somewhat curved, truncate, and toothed (as if splintered) at tip (Figs. 150, 152).

Female. Total length 6.85 ± 0.64 mm; carapace 3.11 ± 0.22 mm long, 2.45 ± 0.16 mm wide (20 specimens measured). Coloration essentially as in male. Epigynum with lateral swellings; swellings long, extending far anteriorly of posterior part of median septum (Figs. 149, 153); median septum with posterior part somewhat broader than long, transversely ridged. Copulatory tubes slender, looped; spermathecae ovoid or elliptical (Fig. 148).

Comments. Specimens of *P. mackenziana* are distinguished by the following characteristics: embolus hair-like; terminal apophysis long, tapered, and toothed; median apophysis truncate and toothed; lateral swellings on the epigynum long; and copulatory tubes looped.

Range. Alaska to Newfoundland, south to northern California and Colorado.

Biology. Individuals of *P. mackenziana* have been commonly collected on the ground in spruce and lodgepole pine forests in the western mountains and in conifer forests of many kinds in the east. Occasional specimens were collected in oak, poplar, or birch forests and in salt marshes, sphagnum bogs, and beach litter along the shores of seas and lakes. Adult males and females have been collected from May to September and egg sacs from June to September.



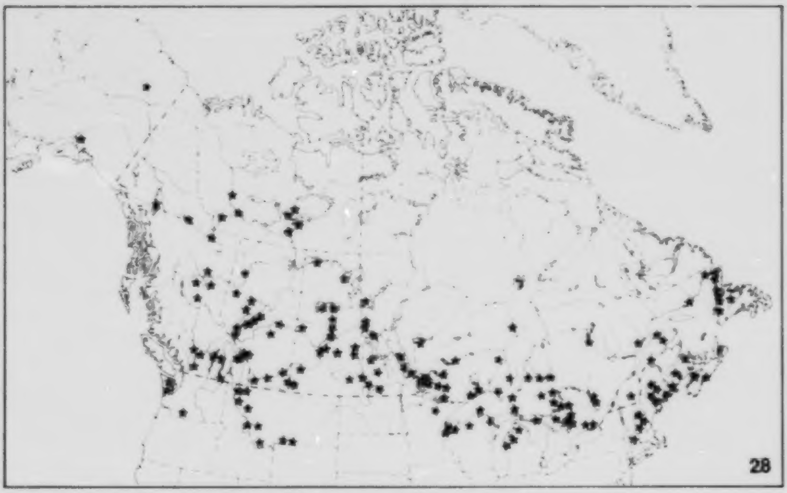
Figs. 148–153. Genitalia of *Pardosa mackenziana*. 148, spermathecae, dorsal view; 149, 153, epigynums: 149, ventral view; 153, basoventral view; 150–152, palpus of male: 150, ventral view; 151, apical division, basal view; 152, distoventral view. *ma*, median apophysis; *term*, terminal apophysis.

Pardosa dorsalis Banks

Figs. 154–161; Map 29

Pardosa dorsalis Banks, 1894:51; Lowrie and Dondale 1981:138, figs. 1, 57–66.

Male. Total length 5.60 ± 0.45 mm; carapace 2.85 ± 0.09 mm long, 2.17 ± 0.13 mm wide (20 specimens measured). Carapace dark brown; median band lighter brown; eye area black. Chelicerae



Map 28. Collection localities of *Pardosa mackenziana*.

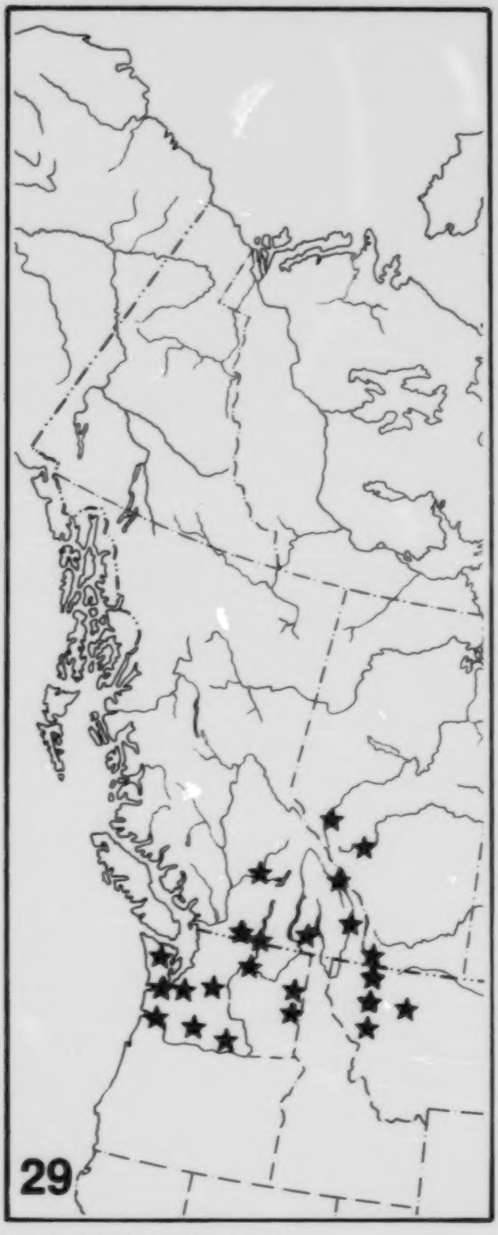
brownish. Sternum dark brownish. Legs mottled light brown and dark brown; femora and tibiae with darker rings. Abdomen mottled light brown and dark brown. Terminal apophysis broad and thin at base, tapered to single tooth at tip; embolus hair-like; median apophysis with distal process; distal process long, thin, pointed (Figs. 159, 160).

Female. Total length 6.33 ± 0.53 mm; carapace 2.93 ± 0.24 mm long, 2.42 ± 0.19 mm wide (16 specimens measured). Coloration essentially as in male. Epigynum with small lateral swellings; median septum with broad posterior part. (Figs. 154, 155). Copulatory tubes slender, looped; spermathecae ovoid (Fig. 157).

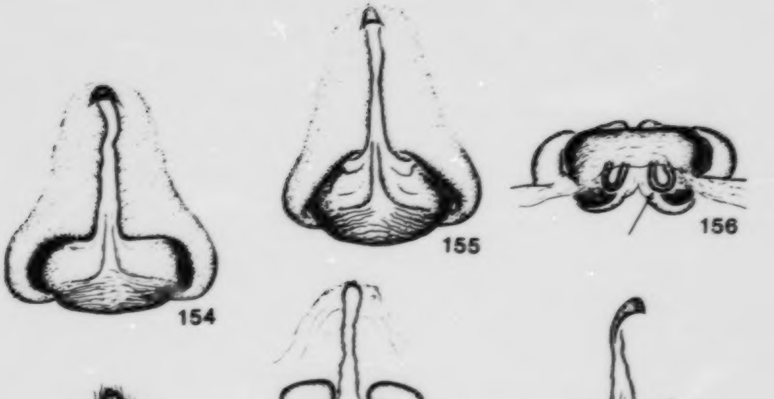
Comments. Specimens of *P. dorsalis* are distinguished by the following characteristics: embolus long and hair-like; terminal apophysis with single tooth at tip; median apophysis long and pointed; lateral swellings on the epigynum small; and copulatory tubes slender and looped.

Range. British Columbia and Alberta to Arizona.

Biology. Individuals of *P. dorsalis* have been collected at elevations of up to 3300 m in the conifer-covered mountains of the West. Males, females, and egg sacs have been collected from June to August.



Map 29. Collection localities of *Pardosa dorsalis*.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Figs. 154–161. Genitalia of *Pardosa dorsalis*. 154–156, epigynums: 154, 155, ventral view; 156, basal view; 157, 158, spermathecae: 157, dorsal view; 158; ventral view, cleared; 159–161, palpus of male: 159, ventral view; 160, distoventral view; 161, apical division, basal view.

The *Pardosa ferruginea* group

Description. Total length 5.8–7.2 mm. Carapace dark brownish, without pale bands. Sternum and chelicerae dark brownish or brownish orange. Legs reddish brown or black; scopulae and setae sparse; tibia I with 2 dorsal macrosetae (not bristles) and with 4 pairs of long ventral macrosetae. Abdomen blackish or brownish, rather hairy. Palpus of male (Figs. 162, 164) hairy; palea deeply concave retrolaterally; terminal apophysis long, slender, spear-shaped, arising distally on palea; tip of terminal apophysis overhanging tip of embolus; embolus long, broad, oblique; conductor broad and sheet-like; median apophysis small, with slender distal process and large basal process. Epigynum hooded (Fig. 165); hood with 1 shallow cavity; median septum slender and tapered anteriorly, broader and diamond-shaped posteriorly; copulatory tubes broad at first, then slender and shallowly arched anteriorly; spermathecae elongate, smooth (Fig. 163).

Comments. Members of the *P. ferruginea* group are distinguished from those of other groups in the genus *Pardosa* by the following characteristics: body and legs brownish; palea deeply concave retrolaterally; terminal apophysis long, slender, spear-shaped, arising distally on palea and overhanging tip of embolus; conductor sheet-like; median apophysis small; epigynal hood with single shallow cavity; median septum slender anteriorly and broader and diamond-shaped posteriorly; copulatory tubes broad basally, then slender and shallowly arched; and spermathecae elongate and smooth. The *P. ferruginea* group was revised by Dondale and Redner (1987), and is represented in Canada and Alaska only by *P. beringiana* Dondale & Redner.

Pardosa beringiana Dondale & Redner

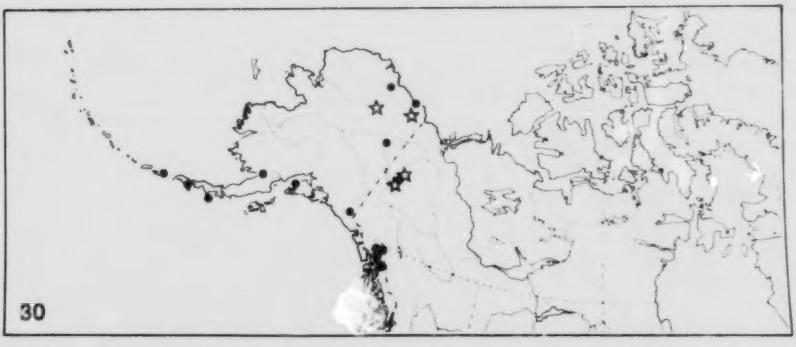
Figs. 162–165; Map 30

Pardosa beringiana Dondale and Redner, 1987:5, figs. 4, 7, 21, 24.

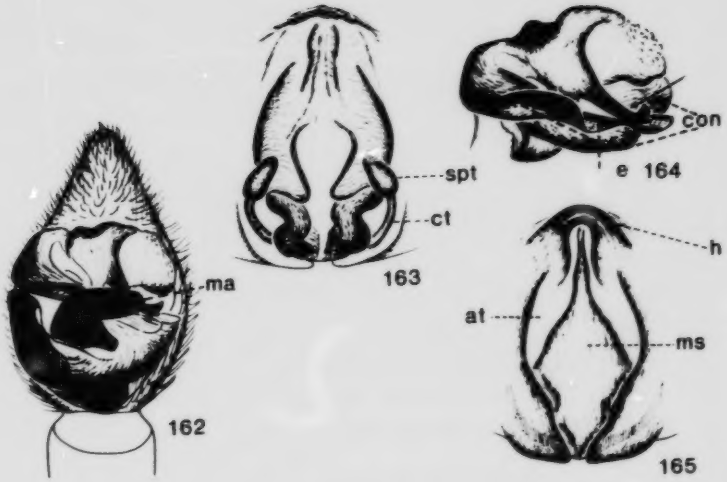
Male. Total length 5.86–6.23 mm; carapace 3.03–3.08 mm long, 2.35–2.40 mm wide (3 specimens measured). Carapace dark brownish, covered with moderately long dense setae; eye area black; longitudinal bands absent. Chelicerae dark brownish orange; retromargin with 3 or 4 teeth. Legs dark reddish brown to black, or with only femora black; scopulae sparse; setae short and sparse except on ventral surfaces of femora; tibia I with 2 strong dorsal macrosetae and with 4 pairs of long overlapping ventral macrosetae. Abdomen ovoid, with many long erect amber-colored setae; dorsum blackish; heart mark large, indistinct; venter blackish. Palpus covered with long black setae; palpal femur, patella, and tibia dark reddish brown; cymbium blackish basally, paler distally; palea deeply concave on retrolateral side; terminal apophysis long, slender, spear-shaped, arising at distal margin of palea; tip of terminal apophysis overlying tip of embolus; embolus long, broad at base but gradually narrowing and becoming hyaline toward tip; conductor broad, flat, thin and sheet-like (Fig. 164); median apophysis rather small, with 2 processes; distal process thin, curved; basal process stout, hooked (Fig. 162); tegulum moderately protruding at base.

Female. Total length 6.13–7.13 mm; carapace 2.94–3.45 mm long, 2.36–2.83 mm wide (3 specimens measured). Coloration of body and legs and macrosetae of tibia I as in male. Epigynum hooded; hood with 1 large cavity; atrium broad and shallow; median septum slender and tapered anteriorly, broader and diamond-shaped posteriorly (Fig. 165); copulatory openings at sides of median septum where septum meets lateral sclerites. Copulatory tubes broad at first and extending to posterior end of epigynum, then more slender and extending anteriorly in slight arch; spermathecae elongate, smooth (Fig. 163).

Comments. Specimens of *P. beringiana* are distinguished from those of other North American species of *Pardosa* by the following characteristics: terminal apophysis spear-shaped; conductor sheet-like; tegulum moderately protruding; median septum diamond-shaped, with broad posterior piece longer than slender anterior piece; copulatory tubes evenly and shallowly arched; carapace uniformly dark; and tibia I with 2 dorsal macrosetae (rather than 2 bristles) and 4 pairs of long overlapping ventral macrosetae.



Map 30. Collection localities of *Pardosa beringiana* (☆) and *P. palustris* (●).



Figs. 162–165. Genitalia of *Pardosa beringiana*. 162, 164, palpus of male: 162, ventral view; 164, apical division, ventral view; 163, spermathecae, dorsal view; 165, epigynum, ventral view. *at*, atrium; *con*, conductor; *ct*, copulatory tube; *e*, embolus; *h*, hood; *ma*, median apophysis; *ms*, median septum; *spt*, spermatheca.

Range. Northern Alaska and Yukon Territory.

Biology. Males were collected in June and females from June to August. The only recorded habitat is talus slopes.

The *Pardosa coloradensis* group

Description. Total length 5.5–8.0 mm. Carapace dark reddish brown, with pale median and submarginal bands. Sternum and chelicerae reddish brown, orange, or black. Legs orange, paler distally; femora sometimes with dark rings. Abdomen dark gray to black, sometimes with heart mark and chevrons. Palpus of male (Figs. 166, 173, 178) dark, hairy; palea with conspicuous oblique sclerite; terminal apophysis slender, finger-like; embolus slender, sinuous; conductor pale, broad; median apophysis with 2 processes; distal process moderately long and either pointed or blunt; basal process short, straight. Epigynum (Figs. 167, 172, 177) without hood; atrium represented by paired grooves at sides of median septum; median septum inconspicuous; copulatory tubes tortuous, extending successively anteriorly, posteriorly, anteriorly, posteriorly, and anteriorly; spermathecae ovoid, bulbous, or somewhat club-shaped, with few small nodules (Figs. 170, 174, 179).

Comments. Members of the *P. coloradensis* group are distinguished from those of other groups in the genus *Pardosa* by the following characteristics: body dark; legs orange; terminal apophysis slender and finger-like; embolus slender and sinuous; median apophysis with distal process moderately long; epigynum without hood; atrium represented by paired grooves; median septum inconspicuous; copulatory tubes tortuous; and spermathecae ovoid, bulbous, or somewhat club-shaped. The group was revised in North America by Dondale and Redner (1986). It is represented in Canada and Alaska by three species.

Pardosa metlakatla Emerton

Figs. 166–170; Map 31

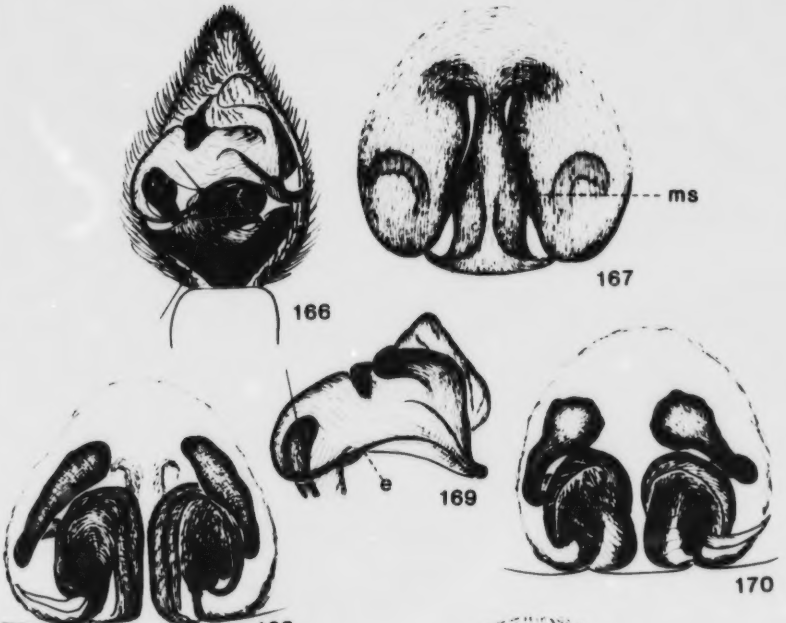
Pardosa metlakatla Emerton, 1917:268, fig. 20 (3, 4); Dondale and Redner 1986:816, figs. 1, 4, 21, 24, 25.

Pardosa hesperella Chamberlin, 1919:16, fig. 4 (pl. 6).

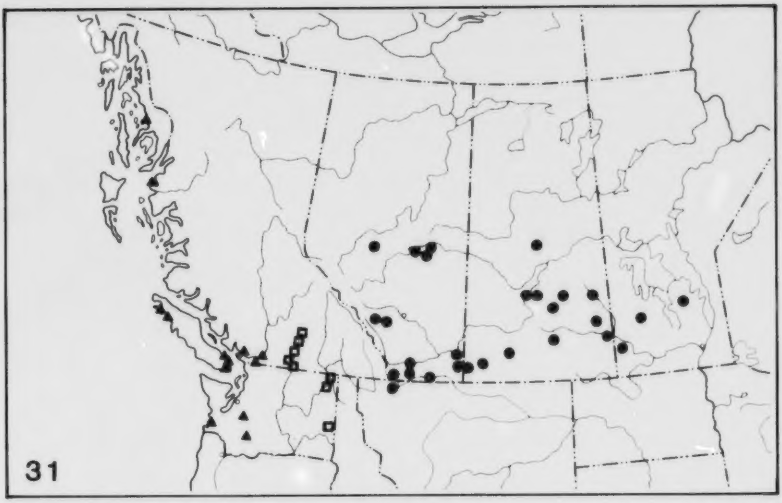
Male. Total length 6.83 ± 0.60 mm; carapace 3.44 ± 0.27 mm long, 2.51 ± 0.17 mm wide (20 specimens measured). Carapace dark reddish brown; median band yellowish, widening anterior to dorsal groove; submarginal bands broad, indistinct. Chelicerae dark brownish, with black longitudinal streaks. Sternum dark brown to black. Legs orange; femora and tibiae with black longitudinal streaks and indistinct rings. Abdomen gray, brownish, or black, sometimes with series of chevrons; heart mark dull red; venter dull orange or dull red. Spinnerets dark. Palpal tibia and cymbium with many long dark curved setae; embolus fully exposed (ventral view); median apophysis with distal process; process pointed and hooked at tip (Fig. 166).

Female. Total length 7.55 ± 0.67 mm; carapace 3.39 ± 0.33 mm long, 2.72 ± 0.29 mm wide (20 specimens measured). Coloration as in male, but light and dark areas more contrasting. Epigynal atrium represented by long paired grooves at sides of median septum (Fig. 167); copulatory tubes tortuous, making 2.5 anterior–posterior loops; spermathecae bulbous or club-shaped, with few small nodules (Figs. 168, 170).

Comments. Specimens of *P. metlakatla* are distinguished from those of the other members of the *P. coloradensis* group by the fully



Figs. 166–175. Structures of *Pardosa* spp. 166–170, *P. metlakatla*. 166, 169, palpus of male: 166, ventral view; 169, apical division, ventral view; 167, epigynum, ventral view; 168, 170, spermathecae, dorsal view. 171–175, *P. coloradensis*. 171, 173, palpus of male: 171, apical division, ventral view; 173, palpus, ventral view. 172, epigynum, ventral view; 174, spermathecae, dorsal view; 175, body of female, dorsal view. *at*, atrium; *con*, conductor; *ct*, copulatory tube; *e*, embolus; *ms*, median septum.



Map 31. Collection localities of *Pardosa metlakatla* (▲), *P. coloradensis* (□), and *P. ontariensis* (●).

exposed embolus, the pointed and hooked distal process on the median apophysis, and the long median septum. In addition, *P. metlakatla* is restricted to the Pacific coast.

Range. Alexander Archipelago of Alaska to Oregon.

Biology. Males of *P. metlakatla* have been collected from May to August and females from late April to September. Egg sacs have been collected from May to August. The habitats include salt marshes, meadows, bogs, grassy beaches, and lawns.

Pardosa coloradensis Banks

Figs. 171–175; Map 31

Pardosa coloradensis Banks, 1894:51; Dondale and Redner 1986:817, figs. 2, 5, 22, 23, 25.

Pardosa sternalis: Chamberlin 1908:185, fig. 2 (pl. 14)—not figs. 5, 6 (pl. 13).

Male. Total length 6.60 ± 0.48 mm; carapace 3.30 ± 0.20 mm long, 2.33 ± 0.14 mm wide (20 specimens measured). Carapace dark reddish brown; median band moderately broad, orange or yellow; submarginal bands moderately broad; margins dark. Chelicerae orange to black, with darker longitudinal streaks. Sternum black, sometimes with slender pale midstripe. Legs orange, paler distally, more uniformly dark ventrally; femora and sometimes tibiae marked dorsally with indistinct darker rings and longitudinal streaks. Abdomen dark gray to black, sometimes with series of chevrons; heart mark pale, slender; venter yellowish orange, buff, or dull reddish; spinnerets dark. Palpal tibia and cymbium dark, with brushes of long black setae; embolus long, slender, curved, greatly arched prolaterally at base in relation to enclosed sclerites; embolus partly concealed (ventral view) by median apophysis; median apophysis with 2 processes; distal process blunt and straight at tip; basal process originating some distance from base (Fig. 173).

Female. Total length 6.78 ± 0.62 mm; carapace 3.23 ± 0.24 mm long, 2.39 ± 0.18 mm wide (20 specimens measured). Coloration as in male, but carapace and legs often paler (Fig. 175). Epigynal atrium represented by paired curved grooves that extend anterior to median septum (Fig. 172); copulatory tubes tortuous, making 2.5 anterior–posterior loops; spermathecae bulbous or somewhat club-shaped, with few small nodules (Fig. 174).

Comments. Specimens of *P. coloradensis* are often confused with those of *P. ontariensis* owing to similarity in size, color, and general structure of the external genitalia. In *P. coloradensis* the embolus is greatly arched prolaterally at the base in relation to the enclosed sclerites, whereas in *P. ontariensis* the embolus is only slightly arched. In females of *P. coloradensis*, the atrium extends farther anteriorly than the median septum, whereas those of *P. ontariensis* have a shorter atrium. In addition, *P. coloradensis* is essentially a montane species, whereas *P. ontariensis* is a grassland species.

Range. Interior British Columbia, south to California, Arizona, and New Mexico.

Biology. Males have been collected from the middle of April to early July and females from April to September. Egg sacs have been collected from the middle of June to August. Habitats include grass along creeks and around lakes, in meadows, and on pine- and sage-covered slopes in foothills and low mountains.

Pardosa ontariensis Gertsch

Figs. 176–179; Map 31

Pardosa ontariensis Gertsch, 1933*a*:18, fig. 27; Dondale and Redner, 1986:818, figs. 3, 6, 27, 28.

Pardosa pristina Fox, 1937:113, fig. 1.

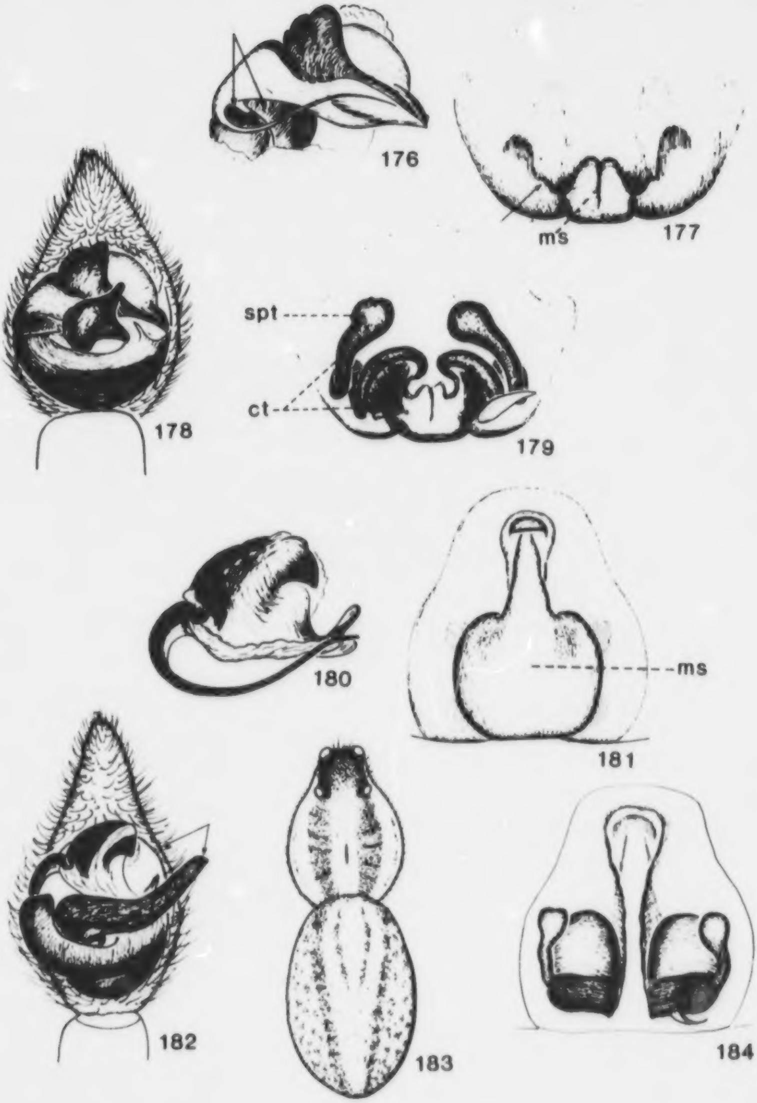
Male. Total length 6.02 ± 0.52 mm; carapace 3.00 ± 0.21 mm long and 2.09 ± 0.14 mm wide (20 specimens measured). Carapace dark reddish brown; median band moderately broad, orange or yellow, widening anterior to dorsal groove; submarginal bands broad, indistinct, orange or yellow. Chelicerae dark reddish brown, with several longitudinal darker streaks. Sternum black. Legs orange to reddish brown, paler distally; femora with indistinct dark streaks or rings dorsally. Abdomen dark gray, dark brown, or black; heart mark slender, pale; venter dull yellowish to gray. Spinnerets dark. Palpal tibia and cymbium with many long black setae; embolus long, slender, tapered, little arched prolaterally at base relative to enclosed sclerites; embolus partly concealed (ventral view) by median apophysis; median apophysis with 2 processes; distal process blunt and straight at tip; basal process originating some distance from base (Fig. 178).

Female. Total length 6.35 ± 0.76 mm; carapace 2.93 ± 0.28 mm long, 2.09 ± 0.18 mm wide (20 specimens measured). Coloration as in male but usually paler; submarginal bands pale and wider; abdomen with pale median area extending to posterior tip. Epigynum with atrium represented by pair of grooves; grooves short, sinuous, ending before anterior end of median septum (Fig. 177); copulatory tubes tortuous, making 2.5 anterior–posterior loops; spermathecae club-shaped, with few small nodules (Fig. 179).

Comments. Specimens of *P. ontariensis* are often confused with those of *P. coloradensis*. In *P. ontariensis* the embolus is only slightly arched prolaterally at the base in relation to the enclosed sclerites, whereas in *P. coloradensis* the embolus is greatly arched. In females of *P. ontariensis*, the atrium does not extend anteriorly of the median septum. In addition, *P. ontariensis* is essentially a grassland species, whereas *P. coloradensis* is essentially a montane species.

Range. Alberta to Manitoba, south to Oregon and Colorado.

Biology. Males have been collected from April to July and females from April to early September. Egg sacs have been collected from late April to early September. The habitat is grassland, including prairies and natural meadows.



Figs. 176–184. Structures of *Pardosa* spp. 176–179, *P. ontariensis*. 176, 178, palpus of male: 176, apical division, ventral view; 178, palpus, ventral view; 177, epigynum, ventral view; 179, spermathecae, dorsal view. 180–184, *P. distincta*. 180, 182, palpus of male: 180, apical division, ventral view; 182, palpus, ventral view; 181, epigynum, ventral view; 183, body of female, dorsal view; 184, spermathecae, dorsal view. *ct*, copulatory tube; *ms*, median septum; *spt*, spermatheca.

The *Pardosa distincta* group

Description. Total length 4.4–6.0 mm. Carapace rather high and narrow anteriorly, with sparse covering of setae; carapace usually dark in males, pale with dark longitudinal bands in females. Sternum dark to pale, often with black markings. Chelicerae dark to pale. Legs pale reddish or pale brown; scopulae sparse; setae short, sparse. Abdomen dark to pale, with distinct heart mark. Palpus of male (Fig. 182) covered with dense black setae; terminal apophysis small, retrolaterodistal on palea, remote from tips of embolus and conductor; embolus long, slender, curved; conductor long, with various small processes at tip; median apophysis with long oblique distal process. Epigynum hooded (Fig. 181); hood broad, with 1 shallow cavity; atrium shallow, not defined at margins; median septum prominent, with narrow anterior part and rounded posterior part; spermathecae small, bulbous, visible through body wall (Fig. 184).

Comments. Members of the *P. distincta* group are distinguished from those of the other groups of the genus *Pardosa* by the following characteristics: body generally pale; terminal apophysis exposed (ventral view); atrium lacking defining lateral margins; median septum prominent, with rounded posterior piece; and spermathecae visible through body wall. The *P. distincta* group was revised by Vogel (1964). It is represented in Canada only by the widespread species *P. distincta* (Blackwall).

Pardosa distincta (Blackwall)

Figs. 180–184; Map 32

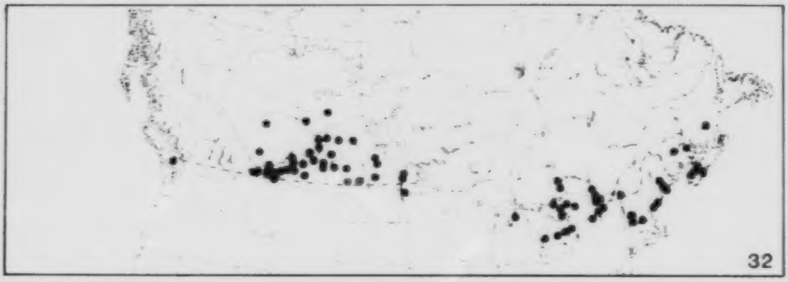
Lycosa distincta Blackwall, 1846:32.

Pardosa pallida Emerton, 1885:496, figs. 3, 3*a*–3*e* (pl. 49).

Pardosa emertoni Chamberlin, 1904*a*:175, new name for *P. pallida* Emerton, preoccupied; Chamberlin 1908:190, figs. 6 (pl. 8), 1 (pl. 14).

Pardosa distincta: Banks 1910:59; Kaston 1948:333, figs. 1095–1099 (pl. 56), 1119–1121 (pl. 57); Vogel 1964:10, figs. 5, 6, 17, 20.

Male. Total length 4.71 ± 0.32 mm; carapace 2.43 ± 0.14 mm long, 1.66 ± 0.08 mm wide (20 specimens measured). Carapace blackish, paler in eastern specimens; median and submarginal bands usually present, indistinct, yellowish or orange. Sternum blackish; sternum in eastern specimens paler with V-shaped dark mark. Chelicerae black, paler in eastern specimens, with pale longitudinal



Map 32. Collection localities of *Pardosa distincta*.

markings. Legs yellowish or pale orange; femora, patellae, and bases of tibiae blackish; tips of tibiae and basitarsi often black. Abdomen blackish, paler in eastern specimens; heart mark large, indistinct; venter gray to blackish, with pair of dark longitudinal bands laterally. Palpus black to dark yellow, with hairy tibia; palea with large shiny sclerite near base of embolus; terminal apophysis small but prominent, flattened, retrolaterodistal on palea; embolus long, slender, tapered, strongly curved (Fig. 180); distal part of embolus concealed by median apophysis (ventral view, Fig. 182); conductor long, concave ventrally, with 2 processes at tip (Fig. 180); median apophysis with 2 processes; distal process long, flat, curved, rugose; basal process small, hooked (Fig. 182).

Female. Total length 5.39 ± 0.61 mm; carapace 2.49 ± 0.20 mm long, 1.73 ± 0.15 mm wide (20 specimens measured). Coloration paler than in male; median and submarginal bands pale, broad, distinct, giving impression of a pale carapace with a pair of narrow dark bands (Fig. 183); sternum yellowish, sometimes with V-shaped mark; lateral margin often with row of black spots; abdomen with pale heart mark flanked by yellowish bands that merge and extend to tip; venter pale, sometimes with pair of dark lateral bands. Epigynum hooded; hood prominent, with 1 broad shallow cavity (Fig. 181); atrium shallow, lacking lateral margins; median septum prominent, flat, with slender anterior piece and rounded posterior piece; copulatory openings situated at lateral margins of posterior part of median septum; copulatory openings extending posteriorly, then anterolaterally; spermathecae small, bulbous, with few small nodules (Fig. 184).

Comments. *Pardosa distincta* is the only member of the *P. distincta* group found in Canada. Distinguishing characters are those given for the group. Vogel (1964) revised the species found in America north of Mexico.

Range. British Columbia to Nova Scotia, south to Arizona and to Connecticut.

Biology. Adult males of *P. distincta* have been collected from April to late August and adult females from April to mid October. Egg sacs have been recorded from mid June to mid October. Collections are from fields, pastures, meadows, bogs, wheat fields, and orchards, and from grassy clearings in woods. Less frequent collections are from deciduous and coniferous woods and from sand dunes, beaches, and quarries. Individuals have been found at elevations of up to 4270 m in Colorado. Kaston (1936) described the mating of this species. Elliott et al. (1982) investigated the allozymic variability in a population from Michigan, and Aitchison (1986) studied the phenology and life history.

The *Pardosa tesquorum* group

Description. Total length 4.1–6.5 mm. Carapace dark reddish brown to black; median and submarginal bands pale, usually present and distinct. Sternum and chelicerae dark brownish to black; cheliceral retromargin with 2 teeth. Legs yellowish to orange. Abdomen black, sometimes mottled with orange and with pale chevrons; venter dull reddish or yellowish. Palpus of male (Figs. 187, 192) dark, hairy; patella pale, with short white setae; palea with hook on basal margin (Figs. 185, 190); terminal apophysis slender, finger-like or flattened, directed ventrally; embolus thin, flat or concave; conductor broad, pale, pointed at tip; median apophysis small, with 2 processes; distal process short; basal process stout or slender (Figs. 187, 192). Epigynal hood (Figs. 186, 191) with paired shallow cavities; median septum slender anteriorly, broader and somewhat heart-shaped posteriorly; copulatory tubes long, slender, curved; spermathecae ovoid or dumbbell-shaped (Figs. 189, 194).

Comments. Members of the *P. tesquorum* group are distinguished from those of other groups in the genus *Pardosa* by the following characteristics: body dark; legs pale; cheliceral retromargin with 2 teeth; male palpus dark and hairy except patella; patella contrastingly pale; palea with hook on basal margin; terminal apophysis slender and finger-like or flattened; conductor broad, pale, and pointed at tip; median apophysis small; epigynal hood with paired shallow cavities; median septum slender anteriorly and broader and somewhat heart-shaped posteriorly; copulatory tubes slender and curved; and spermathecae ovoid or dumbbell-shaped. The group was revised by Dondale and Redner (1986). It is represented in Canada and Alaska by two species.

Pardosa tesquorum (Odenwall)

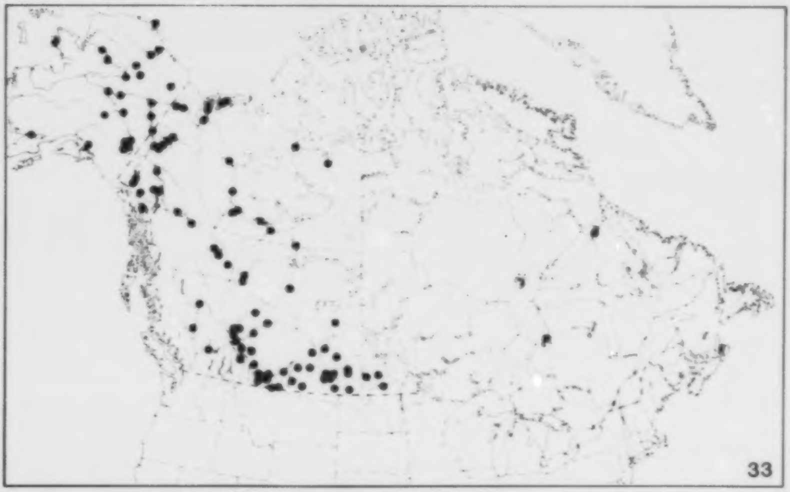
Figs. 185–189; Map 33

Lycosa tesquorum Odenwall, 1901:258, figs. 5, 6.

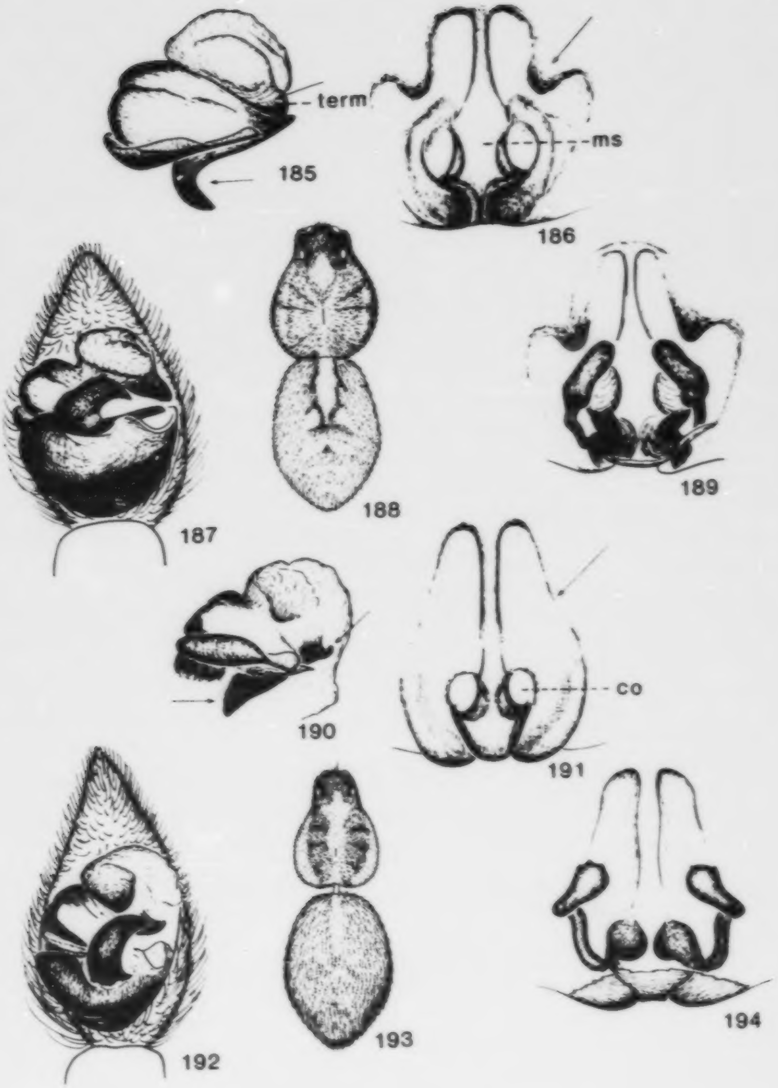
Pardosa albiceps Emerton, 1915:153, figs. 5, 5*a*, 5*b* (pl. 3).

Pardosa tesquorum: Charitonov 1932:51; Dondale and Redner, 1986:826, figs. 17, 18, 43–45.

Male. Total length 4.83 ± 0.44 mm; carapace 2.39 ± 0.17 mm long, 1.83 ± 0.15 mm wide (20 specimens measured). Carapace dark reddish brown to black, with few radiating black lines; median bands pale, indistinct; submarginal bands pale, indistinct, often interrupted or obsolete anteriorly, sometimes totally obsolete. Chelicerae dark reddish brown to black, with paler longitudinal streaks; retromargin of fang furrow with 2 teeth. Sternum dark brown to black, sometimes with yellowish midstripe anteriorly. Legs orange; femora with black streaks and indistinct rings. Abdomen black, with series of pale chevrons; heart mark large, pale; venter dull yellowish or gray, somewhat darker mesally. Palpal femur black; tip pale; palpal patella pale, covered with flattened recumbent white setae; palpal tibia dark, with many long curved black setae; cymbium black, with brush of short tan setae dorsally on distal one-third; terminal apophysis broad, flat; palea with slender curved basal process (Fig. 185); embolus slender, flat, ribbon-like, somewhat curved; median apophysis with 2 processes; distal process stout; basal process minute (Fig. 187).



Map 33. Collection localities of *Pardosa tesquorum*.



Figs. 185–194. Structures of *Pardosa* spp. 185–189, *P. tesquorum*. 185, 187, palpus of male: 185, apical division, ventral view; 187, palpus, ventral view. 186, epigynum, ventral view; 188, body of female, dorsal view; 189, spermathecae, dorsal view. 190–194, *P. mulaiki*. 190, 192, palpus of male: 190, apical division, ventral view; 192, palpus, ventral view; 191, epigynum, ventral view; 193, body of female, dorsal view; 194, spermathecae, dorsal view. *co*, copulatory opening; *ms*, median septum; *term*, terminal apophysis.

Female. Total length 5.69 ± 0.63 mm; carapace 2.55 ± 0.18 mm long, 1.98 ± 0.13 mm wide (20 specimens measured). Coloration as in male; carapace with more distinct pale bands (Fig. 188). Legs paler; femora and tibiae with more distinct dark rings. Epigynum hooded; hood with paired shallow cavities; median septum widest at level of copulatory openings, tapered anteriorly; lateral margins of median septum deeply indented (Fig. 186). Copulatory tubes slender, arched; spermathecae dumbbell-shaped, with few minute nodules (Fig. 189).

Comments. Males of *P. tesquorum* differ from those of the other North American member of the *P. tesquorum* group by having a broad flat terminal apophysis and a slender curved basal hook on the palea. Females of *P. tesquorum* are distinguished as follows: median septum broadest at the level of the copulatory openings; median septum tapered anteriorly; and lateral margins of the epigynal plate deeply indented.

Range. Alaska to northern Quebec, south to Utah and northern New Mexico; Siberia and Kamchatka.

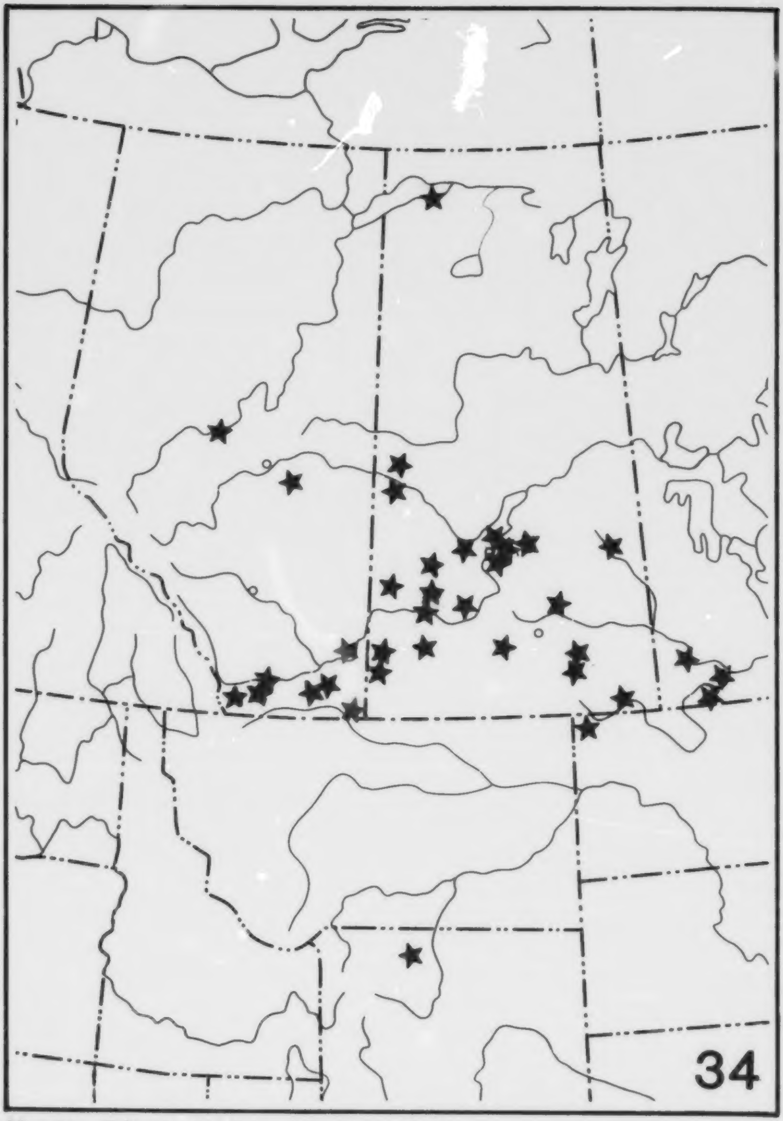
Biology. Males of *P. tesquorum* have been collected from mid May to July and females from mid May to mid October. Eggs have been collected from early June to early October. The main habitats are prairie grassland, stony or sandy beaches, quarries, dry creek beds, talus slopes, and open tundra, as well as herbs and shrubs at the margins of deciduous forests.

Pardosa mulaiki Gertsch

Figs. 190–194; Map 34

Pardosa mulaiki Gertsch, 1934*a*:22; Dondale and Redner 1986:827, figs. 19, 20, 46–48.

Male. Total length 4.36 ± 0.26 mm; carapace 2.06 ± 0.12 mm long, 1.43 ± 0.06 mm wide (20 specimens measured). Carapace dark reddish brown to black; median band pale, indistinct, sometimes partly obliterated or absent; submarginal bands pale, distinct or indistinct. Chelicerae reddish brown; retromargin of fang furrow with 2 teeth. Sternum dark brownish to black. Legs yellowish to dark orange; femora with indistinct black streaks and rings. Abdomen black; heart mark large, covered with white setae; venter dull yellowish, darker mesally. Palpal femur dark; palpal patella pale



Map 34. Collection localities of *Pardosa mulaiki*.

yellowish, with several short white setae; palpal tibia dark, with many long curved black setae; cymbium dark; basal part of cymbium with many long curved black setae; distal one-third of cymbium with dorsal brush of short buff setae; terminal apophysis slender, pointed; palea with stout basally directed process (Fig. 190); embolus long, slender, trough-like, with distal part lying on tegulum; median apophysis with stout distal process and minute basal process (Fig. 192).

Female. Total length 5.79 ± 0.72 mm; carapace 2.43 ± 0.44 mm long, 1.64 ± 0.20 mm wide (20 specimens measured). Coloration as in male; carapace with pale bands distinct; submarginal bands broad, extending laterally to carapace margins (Fig. 193). Epigynum hooded; hood with paired shallow cavities; median septum widest posterior to level of copulatory openings; anterior part of median septum slender and straight-sided; lateral margins of epigynal plate not indented (Fig. 191). Copulatory tubes long, slender, oblique; spermathecae small, kidney-shaped (Fig. 194).

Comments. Males of *P. mulaiki* are distinguished from those of the other North American member of the *P. tesquorum* group by the slender pointed terminal apophysis and by the thick, tapered, nearly straight process on the base of the palea. Females are distinguished as follows: median septum widest posterior to the level of the copulatory openings; anterior part of median septum slender, straight-sided; lateral margins of epigynal plate not indented.

Range. Alberta to Manitoba, south to Colorado.

Biology. Males of *P. mulaiki* have been collected from early June to July, females from mid June to September. Egg sacs have been collected from late June to September. The habitat is grassland, including prairies, alpine meadows, alfalfa fields, and margins of sloughs. Some specimens were collected on sandy beaches or dry stream beds.

The *Pardosa milvina* group

Description. Total length 3.8–6.5 mm. Carapace rather pale, rather high and narrow at anterior end; setae short, sparse, black, often iridescent in eye area. Legs pale, moderately long and strong; scopulae thin; setae sparse. Abdomen often pale mesally, darker laterally, and covered with dense short setae; venter pale. Male palpus (Figs. 195, 203, 206) usually black, contrasting with pale areas of legs and front of carapace; palpal setae black, in fringes along lateral surfaces; palea projecting lip-like at tip of genital bulb;

terminal apophysis stout, tooth-like or blade-like, situated retrolaterodistally but with tip often extending far toward tips of embolus and conductor; conductor with dark shiny knob (Fig. 209); median apophysis usually small, with 2 processes; distal process short, straight, or curved; basal process strong (Figs. 195, 203, 206). Epigynum (Figs. 196, 201, 207) rather long (often longer than twice maximum width of median septum); median septum slender or evanescent anteriorly and broader posteriorly; lateral margins of median septum raised, thickened at site of copulatory openings; copulatory tubes thick, with distinct prominence on ventral or lateral side; spermathecae small, bulbous, occasionally with few minute nodules (Figs. 197, 202, 208).

Comments. Members of the *P. milvina* group are distinguished from those of other groups in the genus *Pardosa* by the following characteristics: body contrastingly pale and dark; palea with lip-like projection; terminal apophysis retrolaterodistal in position, with tip often extending far toward tips of embolus and conductor; median apophysis with well-developed basal process; epigynum long, slender, often evanescent anteriorly; median septum with raised thickened margins at site of copulatory openings; copulatory tubes thick; and spermathecae usually smooth. The group was revised by Dondale and Redner (1984). It is represented in Canada by three species.

Pardosa saxatilis (Hentz)

Figs. 195–200; Map 35

Lycosa saxatilis Hentz, 1844:392, figs. 9, 10 (pl. 18).

Lycosa minima Keyserling, 1877:614, fig. 3 (pl. 7).

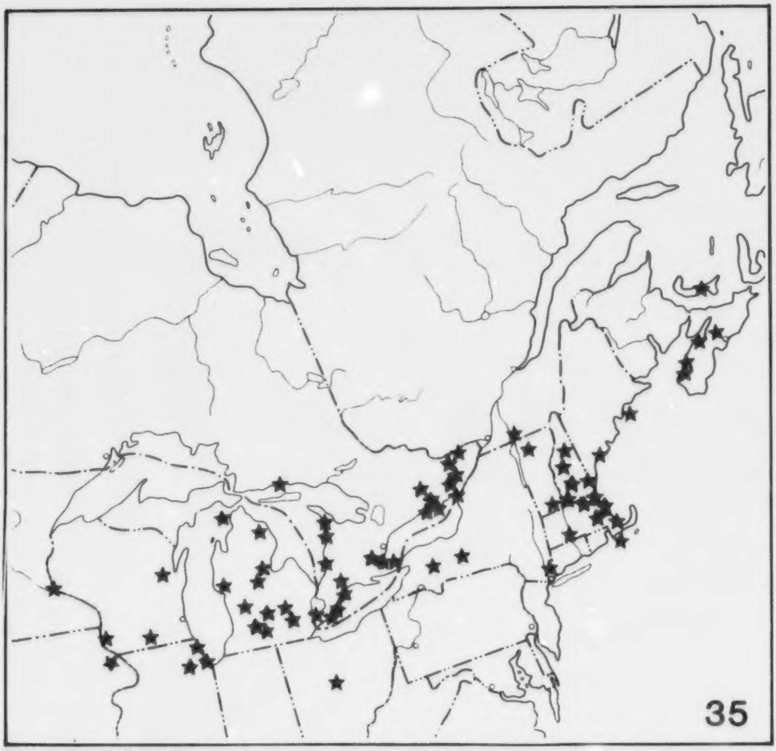
Pardosa albopatella Emerton, 1885:497, figs. 2, 2*a*, 2*b* (pl. 49).

Pardosa annulata Banks, 1892:68, fig. 41 (pl. 1).

Pardosa saxatilis: Chamberlin 1908:174, figs. 1, 2 (pl. 13); Kaston 1948: 335, figs. 1104 (pl. 56), 1124, 1125 (pl. 58), 1139 (pl. 59); Dondale and Redner 1984:87, figs. 16, 19–21, 58, 59.

Pardosa platta Chamberlin and Ivie, 1942:31, fig. 72 (pl. 7).

Male. Total length 4.24 ± 0.40 mm; carapace 2.27 ± 0.18 mm long, 1.71 ± 0.14 mm wide (20 specimens measured). Carapace (Fig. 198) with paired dark longitudinal bands flanking median band; median band dark orange or dark yellow; submarginal bands orange or yellow; margins pale or marked by series of dark spots. Chelicerae dark brown, streaked with black. Sternum dark orange, suffused with black. Legs yellowish orange; femur I dark. Abdomen dark orange; mesal area mottled with brown and black; lateral area

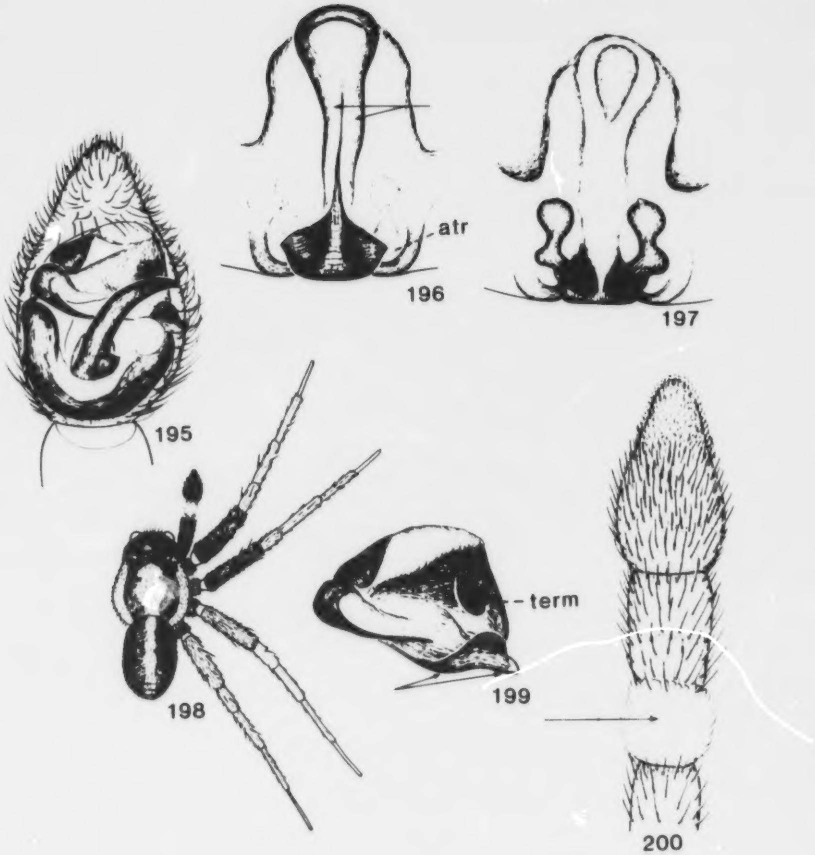


Map 35. Collection localities of *Pardosa saxatilis*.

darker (Fig. 198); venter dark brownish orange. Palpal patella covered dorsally with white setae (Figs. 198, 200); terminal apophysis small, blunt; conductor sinuous along basal margin, with dark shiny knob near tip (Fig. 199); median apophysis long, slender, curved (Fig. 195).

Female. Total length 4.48 ± 0.38 mm; carapace 2.27 ± 0.14 mm long, 1.75 ± 0.14 mm wide (20 specimens measured). Coloration as in male but pale areas on carapace more extensive and more distinct, femur I lacking dark area, and rings on distal leg segments more distinct. Epigynum hooded; median septum extending anteriorly approximately one-half epigynal length; hood extending posteriorly at sides, defining raised tapered area (Fig. 196). Copulatory tubes short, slender, with distinct lateral swellings (Fig. 197).

Comments. Specimens of *P. saxatilis* are distinguished by the dorsal covering of reflective white setae on the palpal patella in



Figs. 195–200. Structures of *Pardosa saxatilis*. 195, 199, 200, palpus of male: 195, ventral view; 199, apical division, ventral view; 200, dorsal view; 196, epigynum, ventral view; 197, spermathecae, dorsal view; 198, body of male, dorsal view. *atr*, atrium; *term*, terminal apophysis.

males, and, in females, by the posterior extension of the epigynal hood, which defines a raised tapered area. The species is believed to be closely related to *P. atlantica* Emerton and to *P. parvula* Banks, which occur farther south (Dondale and Redner 1984).

Range. Nebraska and Minnesota to Nova Scotia, south to northern Alabama and North Carolina.

Biology. Males of *P. saxatilis* have been collected in March, May to September, and November, and females have been found from May to September. The usual habitats are grassy fields or meadows, but a few individuals were also found in marshes, bogs, deciduous woods, or sandy beaches. Wolff (1981) reported the life history of the species in Michigan, and Dondale (1977) provided similar data for specimens in south-central Ontario. Hegdekar and Dondale (1969) showed the presence of a probable sex pheromone in females.

Pardosa littoralis Banks

Figs. 206–209; Map 36

Pardosa littoralis Banks, 1896*b*:192; Emerton 1909:207, figs. 5, 5*a*, 5*b* (pl. 6); Dondale and Redner 1984:91, figs. 22, 25, 60, 61.

Pardosa longispinata Tullgren, 1901:23, fig. 13 (pl. 1).

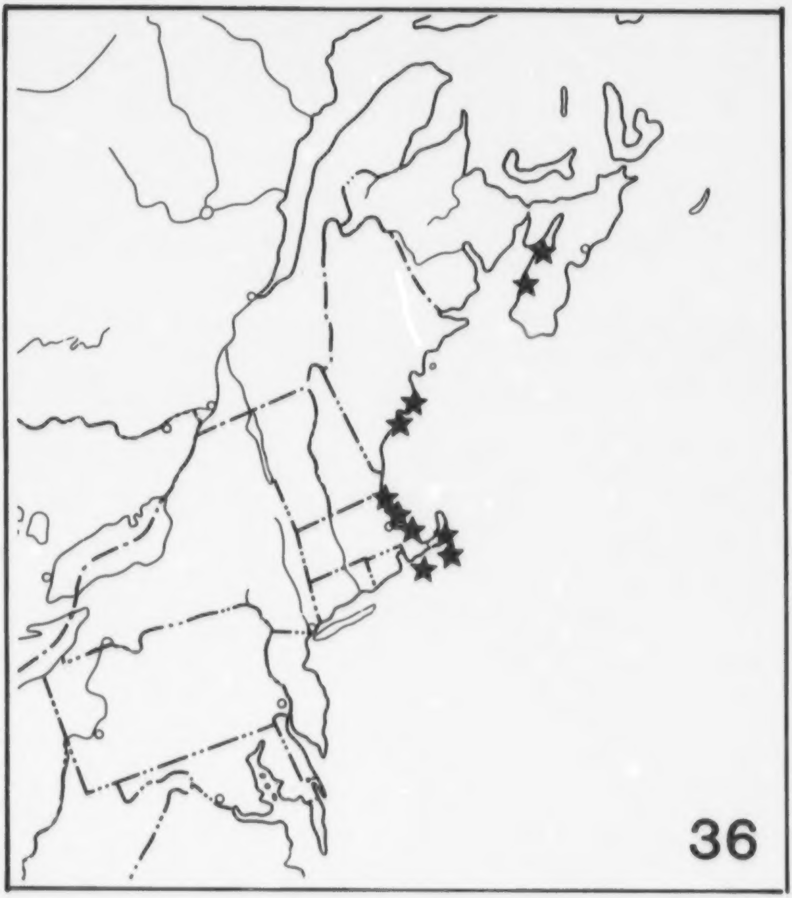
Pardosa floridana Banks, 1904*b*:136, figs. 1 (pl. 7), 15 (pl. 8); Kaston, 1948:336, figs. 1126 (pl. 58), 1140, 1141 (pl. 59).

Pardosa banksi Chamberlin, 1904*a*:175. New name for *Pardosa littoralis* Banks; Chamberlin 1908:182, fig. 7 (pl. 13).

Pardosa ocala Bryant, 1935:81, fig. 12 (pl. 5).

Male. Total length 5.07 ± 0.42 mm; carapace 2.66 ± 0.19 mm long, 2.03 ± 0.16 mm wide (20 specimens measured). Carapace with paired dark longitudinal bands flanking mesal band; mesal band orange or yellowish orange; submarginal bands yellowish orange; lateral margins usually dark. Chelicerae orange. Sternum orange with marginal black spots and dark mesal band or V-shaped mark, rarely entirely black. Legs orange or yellowish orange; femur I sometimes dark basally. Abdomen black, sometimes with pale heart mark and series of pale spots at midline, or mottled with yellowish brown; venter dull yellow, sometimes with small dark spots. Terminal apophysis long, stout, tapered, extending to or beyond tip of embolus (Fig. 206); conductor directed retrolaterobasally, with dark shiny knob near tip (Fig. 209); basal margin of conductor with single curve; median apophysis broad at base, slender and curved at tip (Fig. 206).

Female. Total length 5.87 ± 0.65 mm; carapace 2.83 ± 0.32 mm long, 2.19 ± 0.32 mm wide (20 specimens measured). Coloration as in male but paler; abdominal dorsum with only scattered black spots on a yellowish background. Epigynum hooded; median septum extending anteriorly nearly to level of hood, rather broad anteriorly (Fig. 207). Copulatory tubes short, slender, with lateral swellings (Fig. 208).

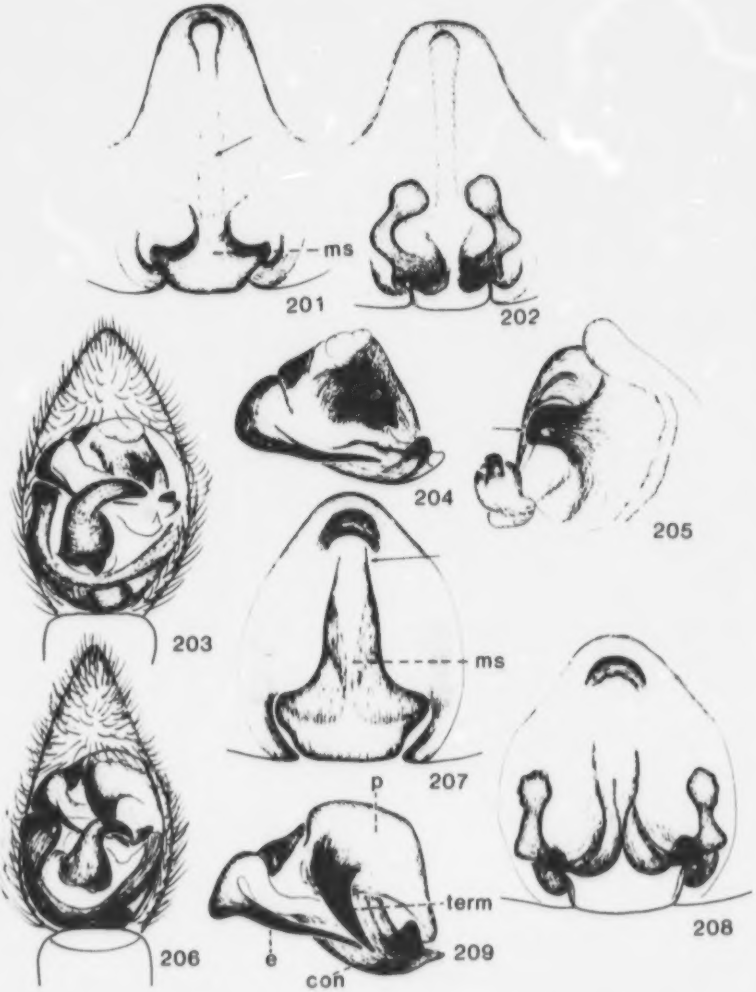


Map 36. Collection localities of *Pardosa littoralis*.

Comments. Specimens of *P. littoralis* are distinguished by the greatly elongated terminal apophysis in the male palpus and by the anteriorly broad median septum of the epigynum.

Range. Texas to Florida, north along or near the Atlantic coast to Nova Scotia; Cuba.

Biology. Adults of *P. littoralis* have been collected from May to September in Canada and in the adjacent United States. In general, the species inhabits salt marshes; the present authors observed adults running on such a marsh along the Bay of Fundy on a warm day at the end of May. They were darting over and under a mat of dry



Figs. 201–209. Genitalia of *Pardosa* spp. 201–205, *P. milvina*. 201, epigynum, ventral view; 202, spermathecae, dorsal view; 203–205, palpus of male: 203, ventral view; 204, apical division, ventral view; 205, apical division, retrolateral view. 206–209, *P. littoralis*. 206, 209, palpus of male: 206, ventral view; 209, apical division, ventral view; 207, epigynum, ventral view; 208, spermathecae, dorsal view. *con*, conductor; *e*, embolus; *ms*, median septum; *p*, palea; *term*, terminal apophysis.

marsh grasses, close to the water's edge, where the mud was wet from the previous tide. If overtaken by a wave they either ran over its surface or climbed emergent plant stems. Courtship was described (under the name *P. banksi*) by Kaston (1936).

Pardosa milvina (Hentz)

Figs. 201–205; Map 37

Lycosa milvina Hentz, 1844:392, fig. 8 (pl. 18).
Lycosa flavipes Keyserling, 1877:616, fig. 4 (pl. 7).
Pardosa nigropalpis Emerton, 1885:497, figs. 1, 1*a*–1*d* (pl. 49).
Pardosa milvina: Banks 1899:189; Chamberlin 1908:177, figs. 3, 4 (pl. 13); Kaston 1948:334, figs. 1100–1103 (pl. 56), 1138 (pl. 59); Dondale and Redner 1984:97, figs 30–32, 70, 71.
Pardosa scita Montgomery, 1902:573, figs. 37, 38 (pl. 30).

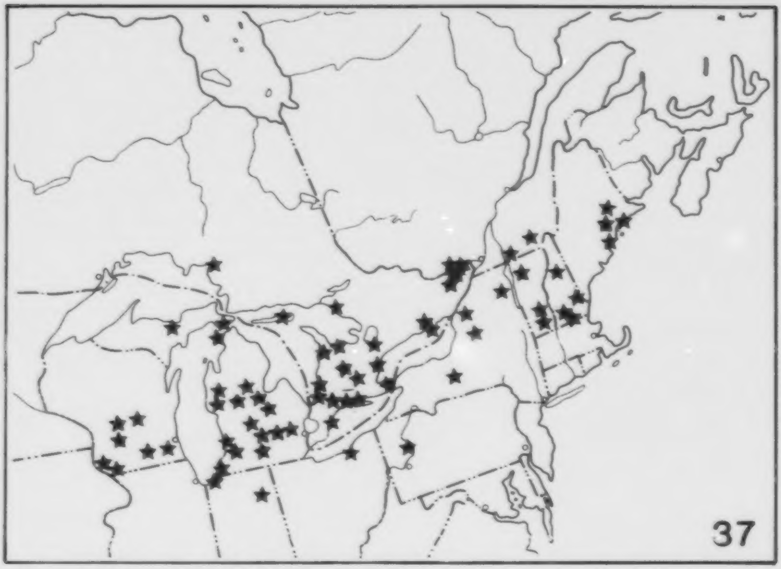
Male. Total length 4.64 ± 0.36 mm; carapace 2.40 ± 0.20 mm long, 1.91 ± 0.15 mm wide (20 specimens measured). Carapace with paired black longitudinal bands flanking median band; median band yellowish orange; submarginal bands yellowish orange; margins often pale. Chelicerae pale to dark yellowish brown. Sternum yellow to nearly black. Legs yellowish orange; femur I sometimes black basally. Abdomen yellowish brown, much mottled with black; venter pale yellow, often somewhat spotted or lined with black. Terminal apophysis broad, blunt (Figs. 203, 204); conductor curved on basal margin, with dark shiny knob near tip (Fig. 204); median apophysis slender at middle, with slender distal process (Fig. 203).

Female. Total length 5.77 ± 0.65 mm; carapace 2.73 ± 0.25 mm long, 2.16 ± 0.19 mm wide (20 specimens measured). Coloration as in male; legs more distinctly ringed; abdominal dorsum sometimes with paired indistinct longitudinal bands; femur I lacking black basal area. Epigynum hooded; hood extending posteriorly at sides, where it defines a depressed untapered area (Fig. 201); median septum extending anteriorly less than one-half length of epigynum. Copulatory tubes rather slender, with lateral swellings (Fig. 202).

Comments. Specimens of *P. milvina* are distinguished by the following characteristics: terminal apophysis small, broad, blunt; median apophysis slender, with slender distal process; median septum short; and hood extending posteriorly at sides, where it defines a depressed untapered area.

Range. Wisconsin and Michigan to southern Quebec and Maine, south to Texas and Florida.

Biology. Adults of *P. milvina* have been collected from May to September. They appear to reach high numbers in moist habitats such as swamps, meadows, mud flats, and the edges of ponds and creeks, but they are also found in deciduous and cedar woods, lawns, gardens, and pastures. Montgomery (1903) and Kaston (1936)



Map 37. Collection localities of *Pardosa milvina*.

described the courtship. Elliott et al. (1982) investigated the allozymic variability of this spider in Michigan.

The *Pardosa lapponica* group

Description. Total length 5.5–7.4 mm. Carapace reddish brown or darker, sometimes entirely black, usually with pale median and submarginal bands. Chelicerae and sternum dark brown to black. Legs reddish brown to orange; femora usually with dark rings. Abdomen dark brownish to black, usually with pale heart mark, sometimes with chevrons. Palpal tibia dark, hairy; terminal apophysis short or long, tapered or finger-like (Figs. 213, 218); embolus broad at base, slender and nearly straight distally; conductor long, broad, with angled folded tip; median apophysis with 2 processes; distal process long, stout, sinuous, extending to retrolateral margin of genital bulb; basal process small (Figs. 210, 214). Epigynum hooded; hood with 1 large cavity (Figs. 212, 216); median septum with anterior part slender; posterior part prominent, flat, broader; copulatory tubes short or long, extending posterolaterally or curved; spermathecae long, slender, club-shaped, with small nodules (Figs. 211, 217).

Comments. Members of the *P. lapponica* group are distinguished from those of other groups in the genus *Pardosa* by the following characteristics: body and legs reddish brown to black; embolus broad at base and slender distally; conductor angled and folded at tip; median apophysis with long, stout, sinuous distal process and small basal process; epigynal hood with single large cavity; median septum slender anteriorly, prominent, flat, and wider posteriorly; and spermathecae long, slender, and club-shaped. The group was revised for North America by Dondale and Redner (1986). It is represented in Canada and Alaska by two species.

Pardosa lapponica (Thorell)

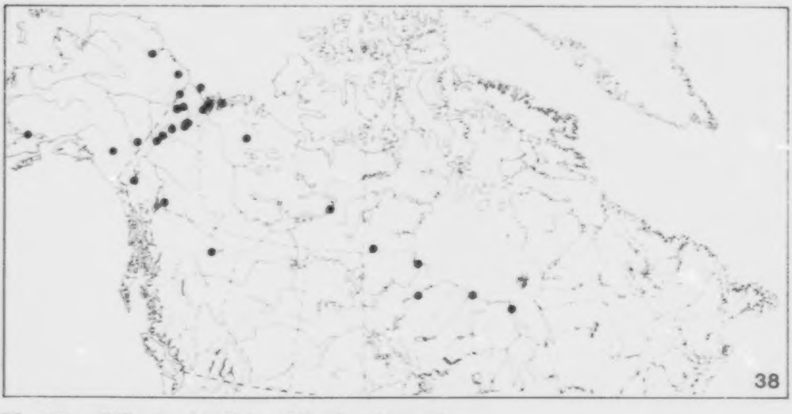
Figs. 210–213; Map 38

Lycosa lapponica Thorell, 1872*b*:273.

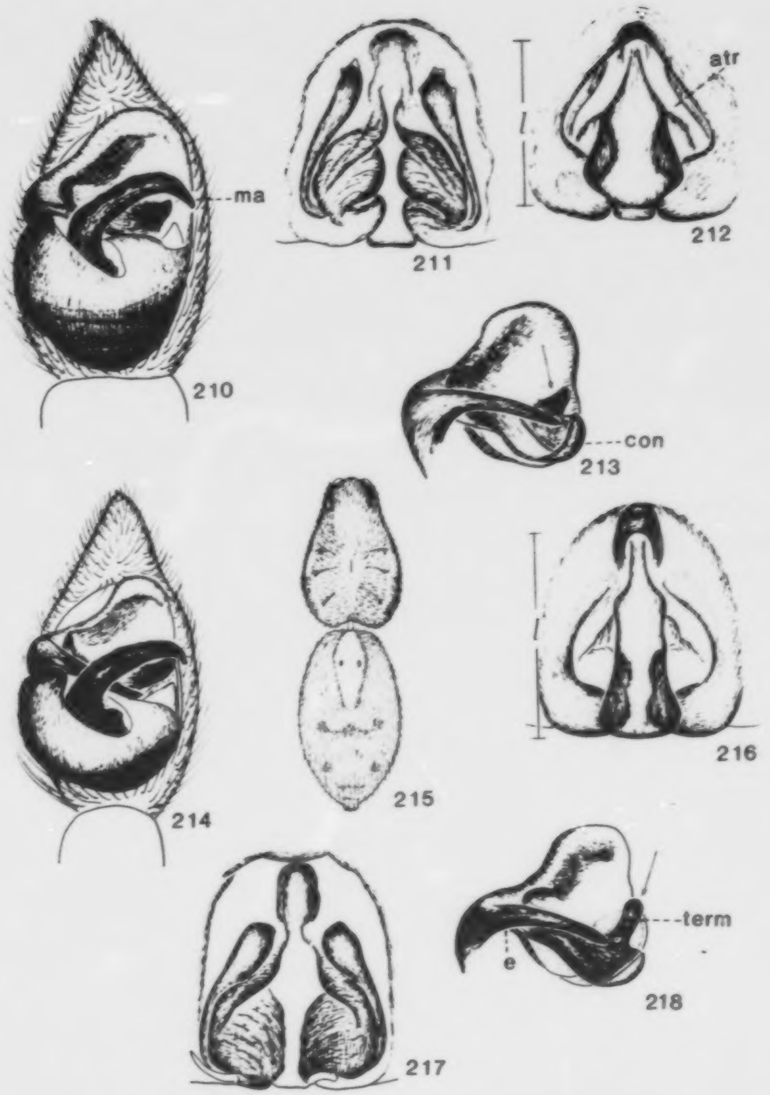
Pardosa lapponica: Palmgren 1939:51, figs. 52, 71, 81, 92; Holm 1947:36, figs. 46 (pl. 10), 74, 75 (pl. 7); Dondale and Redner 1986:823, figs. 13, 14, 38, 39.

Pardosa harperi Bishop, 1949:100, figs. 7, 8.

Male. Total length 5.81 ± 0.33 mm; carapace 2.95 ± 0.15 mm long, 2.13 ± 0.13 mm wide (20 specimens measured). Carapace dark reddish brown or paler; median band pale, widening and becoming indistinct anterior to dorsal groove; submarginal bands irregular. Chelicerae brownish orange. Sternum dark brown to black. Legs reddish brown to orange; femora somewhat blackened on basal half, sometimes with 3 or 4 dark rings. Abdomen reddish orange, with several reddish orange chevrons; heart mark large; venter yellowish, somewhat darker mesally. Palpal tibia hairy; terminal apophysis



Map 38. Collection localities of *Pardosa lapponica*.



Figs. 210–218. Structures of *Pardosa* spp. 210–213, *P. lapponica*. 210, 213, palpus of male: 210, ventral view; 213, apical division, ventral view; 211, spermathecae, dorsal view; 212, epigynum, ventral view. 214–218, *P. concinna*. 214, 218, palpus of male: 214, ventral view; 218, apical division, ventral view; 215, body of female, dorsal view; 216, epigynum, ventral view; 217, spermathecae, dorsal view. *atr*, atrium; *con*, conductor; *e*, embolus; *l*, length of median septum; *ma*, median apophysis; *term*, terminal apophysis.

short, tapered (ventral view, Fig. 213); embolus stout at base, slender and nearly straight distally; median apophysis with long distal process extending to margin of genital bulb (Fig. 210).

Female. Total length 6.51 ± 0.62 mm; carapace 3.04 ± 0.23 mm long, 2.25 ± 0.18 mm wide (20 specimens measured). Coloration as in male; carapace with pale bands more distinct; submarginal bands wider, sometimes extending to carapace margins; legs usually uniformly brownish orange; femoral rings faint. Epigynum hooded; hood with 1 large cavity; median septum prominent, flat, rather short, extending broadly between lateral sclerites, tapered anteriorly (Fig. 212). Copulatory tubes short, extending posterolaterally; spermathecae long, curved, club-shaped, with several small nodules (Fig. 211).

Comments. Males of *P. lapponica* differ from those of *P. concinna* in having a short tapered terminal apophysis. Females of *P. lapponica* are difficult to distinguish from those of *P. concinna*, but the former usually have a relatively shorter median septum (0.53 ± 0.06 mm, range 0.46–0.71, sample size 50).

Range. Alaska and northern British Columbia to James Bay, Ont.; northern Europe and northern Asia.

Biology. Males have been collected in June and July and females from June to August. Egg sacs were found from June to August. Individuals occur on open or shrubby tundra, limestone outcrops, talus slopes, lichen mats, and peat deposits.

Pardosa concinna (Thorell)

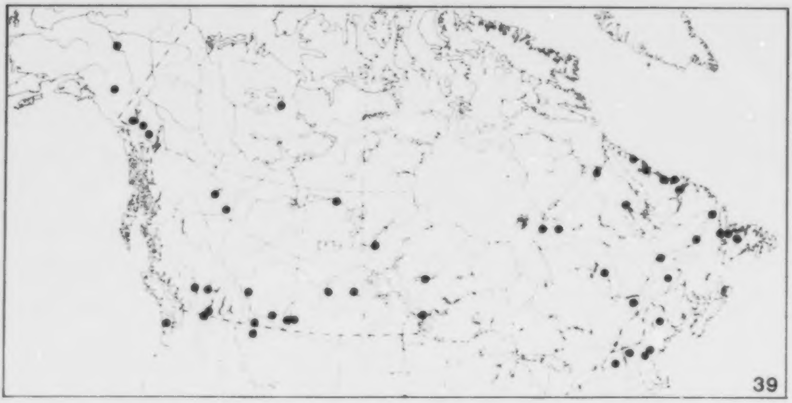
Figs. 214–218; Map 39

Lycosa concinna Thorell, 1877:506.

Pardosa muscicola Emerton, 1911:401, figs. 2, 2*a*–2*c* (pl. 5).

Pardosa concinna: Gertsch 1934*a*:18; Dondale and Redner 1986:824, figs. 15, 16, 40–42.

Male. Total length 6.12 ± 0.43 mm; carapace 3.08 ± 0.22 mm long, 2.37 ± 0.20 mm wide (20 specimens measured). Carapace dark reddish brown, with few radiating black lines; median band pale, widening anterior to dorsal groove; submarginal bands pale; pale bands covered with white setae. Chelicerae dark reddish brown, setaceous. Sternum dark brown to black. Legs dark reddish or dark orange; femora with faint darker rings. Abdomen brownish or grayish, sometimes mottled with black, sometimes with series of pale chevrons; heart mark large, pale, usually present; venter grayish.



Map 39. Collection localities of *Pardosa concinna*.

Palpal tibia with many long curved setae; terminal apophysis long, finger-like (Fig. 218); embolus stout at base, blade-like and nearly straight distally; median apophysis with 2 processes; distal process extending to margin of genital bulb; basal process stout, pointed (Fig. 214).

Female. Total length 6.47 ± 0.98 mm; carapace 3.06 ± 0.27 mm long, 2.28 ± 0.18 mm wide (20 specimens measured). Coloration (Fig. 215) as in male; pale bands on carapace usually more distinct; legs paler; femora and tibiae with dark rings distinct; abdomen paler than in males. Epigynum hooded; hood with 1 large cavity; median septum broad, flat, extending broadly between lateral sclerites, tapered anteriorly, usually rather long (Fig. 216). Copulatory tubes long, slender, curved; spermathecae long, club-shaped, with a few minute nodules (Fig. 217).

Comments. Males of *P. concinna* are distinguished from those of the other Canadian members of the *P. lapponica* group by the long finger-like terminal apophysis. Females are distinguished by the possession of a median septum that is usually rather long (0.73 ± 0.07 mm, range 0.62–0.88, sample size 50).

Range. Alaska to Newfoundland, south to New Mexico and to Maine.

Biology. Males and females of *P. concinna* have been collected from May to August and egg sacs from late June to early September. The known habitats are alpine tundra, alpine meadows, sand dunes, slopes covered with sage or lodgepole pine, and grassland in the northern Great Plains.

The *Pardosa atrata* group

Description. Total length 6.6–7.9 mm. Carapace dark reddish brown to black; median and submarginal bands pale. Chelicerae dark reddish brown. Sternum dark brown to black. Legs dark reddish. Abdomen dark brownish to black, hairy. Palpus of male dark, hairy; terminal apophysis stout, finger-like (Fig. 223); embolus long, broad; conductor broad, with fold along distal part; median apophysis small, with 2 processes of approximately equal length; distal process blunt, angled; basal process large (Fig. 221). Epigynal hood prominent; hood cavities paired, shallow (Fig. 219); atrium broad, deep, abruptly widening at level of hood (Fig. 219), with several rugose curved ridges, lacking cavity sclerites; median septum long, slender, not tapered anteriorly; posterior end wider, fully occupying gap between ends of lateral sclerites; copulatory tubes long, slender, arched; spermathecae long, slender, club-shaped (Fig. 220).

Comments. Members of the *P. atrata* group are distinguished from those of other groups of the genus *Pardosa* by the following characteristics: body and legs dark; terminal apophysis stout and finger-like; embolus long and broad; conductor broad; median apophysis small, with short angled distal process and large hooked basal process; epigynal hood with paired shallow cavities; atrium abruptly widening at level of hood; median septum long, with slender short anterior part and broad posterior part; and spermathecae club-shaped, extending anteriorly to level of epigynal hood. The single North American species, *P. fuscula* (Thorell), was revised by Dondale and Redner (1987).

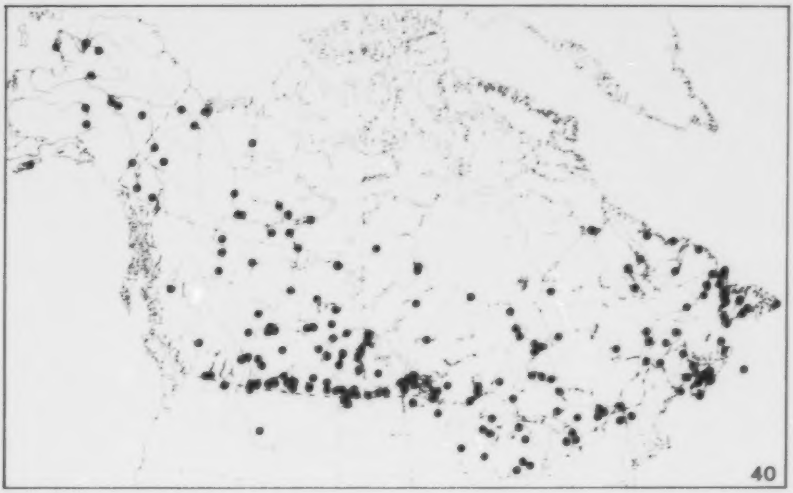
Pardosa fuscula (Thorell)

Figs. 219–223; Map 40

Lycosa fuscula Thorell, 1875:501.

Pardosa fuscula: Chamberlin and Ivie 1947:19; Levi and Levi 1951:225, figs. 12, 15; Dondale and Redner 1987:2, figs. 1, 2, 17–19.

Male. Total length 7.19 ± 0.56 mm; carapace 3.48 ± 0.27 mm long, 2.69 ± 0.21 mm wide (20 specimens measured). Carapace dark reddish brown to black, with several black lines radiating from dorsal groove area; median and submarginal bands pale and usually distinct. Chelicerae dark reddish brown. Sternum dark brown to black. Legs dark reddish, hairy ventrally; femora with black streaks. Abdomen dark brownish to black, hairy; heart mark long, brownish; venter dull reddish to black. Palpal tibia dark, hairy; palea rather flat; terminal apophysis stout, finger-like, pointed, directed ventrally

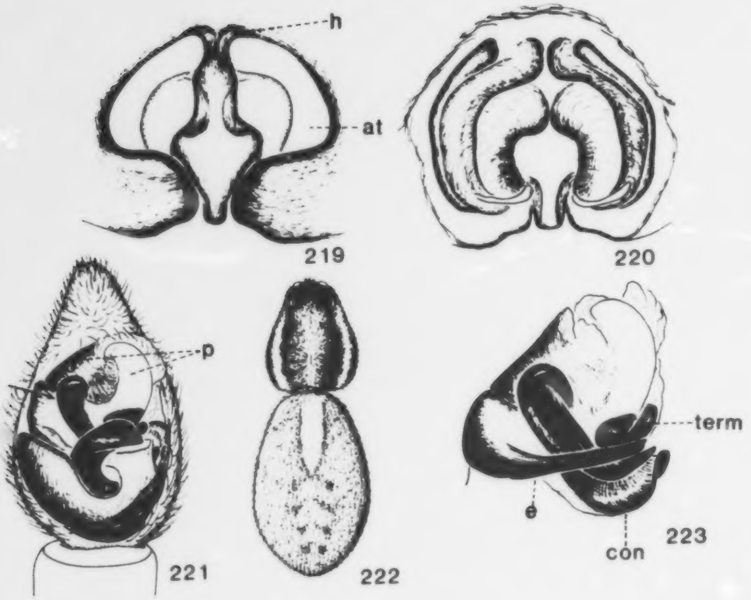


Map 40. Collection localities of *Pardosa fuscula.*

(Fig. 223); embolus long, broad; conductor broad, rather convex, somewhat oblique, with fold along distal part; median apophysis flat, with 2 processes; distal process blunt, angled; basal process large, hooked (Fig. 221).

Female. Total length 7.22 ± 0.66 mm; carapace 3.33 ± 0.20 mm long, 2.64 ± 0.23 mm wide (20 specimens measured). Coloration essentially as in male, but pale bands on carapace more distinct than in male (Fig. 222). Epigynal hood prominent, with paired shallow cavities; atrium broad and deep, marked by ridges curving posterolaterally from sides of septum; median septum moderately long; anterior part of median septum slender, uniform in width; posterior part angular, fitting snugly between posterior ends of lateral sclerites (Fig. 219); copulatory openings at sides of median septum where septum is widest. Copulatory tubes long, slender, arched far laterally; spermathecae long, slender, club-shaped, extending to level of hood, with few minute nodules (Fig. 220).

Comments. Individuals of *P. fuscula* are distinguished by the following characteristics: palea flat; embolus long and stout; conductor with distal fold; median apophysis with blunt angled distal process and large hooked basal process; epigynal atrium with several rugose ridges curving posterolaterally from sides of median septum; and spermathecae extending anteriorly to level of hood. Unpublished studies on the courtship behavior and allozymic variability of *P. fuscula* and of the similar *P. atrata* (Thorell) of Europe and Asia, by T. Kronestedt, C.D. Dondale, B.N.A. Hudson, and J.H. Redner



Figs. 219–223. Structures of *Pardosa fuscula*. 219, epigynum, ventral view; 220, spermathecae, dorsal view; 221, 223, palpus of male: 221, ventral view; 223, apical division, ventral view; 222, body of female, dorsal view. *atr*, atrium; *con*, conductor; *e*, embolus; *h*, hood; *p*, palea; *term*, terminal apophysis.

(manuscript in preparation), indicate that *P. fuscula* and *P. atrata* are probably distinct but closely related species. These studies were based on single samples from two respective localities in Ontario and Sweden, and further tests could modify this conclusion. The status of the North American and Eurasian forms therefore remains uncertain.

Range. Alaska to Newfoundland, south to northern New Mexico and northern New England.

Biology. Adult males of *P. fuscula* have been collected from May to August and adult females from May to mid October. Egg sacs have been collected from late May to mid October. The species prefers moist habitats, mainly fresh and salt marshes, bogs, and meadows, but occasional individuals are found in alpine tundra or conifer forests, or in forage crops such as alfalfa.

The essential features of the courtship of *P. fuscula*, as observed in eastern Canada, are as follows: the male raises his body to its full height, while legs I, held to the front and sides, make a series of up to 6 flexions. At the same time, the palpi make a series of 8–13 flexions in alternation. The male then lowers his body. Males of *P. atrata*, on the other hand, court by moving toward the female by a series of body undulations or rhythmic bobs, each followed by a pause. During each body undulation, legs I make 1 and the palpi usually 2 flexions, with the palpi moving in alternation.

Electrophoresis (B.N.A. Hudson, personal communication, 1984) indicates that populations of *P. fuscula* and *P. atrata* differ in at least one enzyme, malate dehydrogenase. The average level of heterozygosity for nine enzymes was 0.05 for *P. fuscula* and 0.11 for *P. atrata*. These indices are comparable to those obtained for the North American species *P. moesta* Banks, *P. milvina* (Hentz), and *P. distincta* (Blackwall) (Elliott et al. 1982), each of which belongs to a separate species group.

The *Pardosa solituda* group

Description. Total length 6.4–10.7 mm. Carapace dark, lacking pale bands. Sternum and chelicerae dark brownish. Legs dark; distal segments with numerous long white setae; tibiae I and II with 5 or 6 pairs of ventral macrosetae in both sexes. Abdomen dark. Palpus dark; palea concave, with process; terminal apophysis long, curved (Fig. 226); embolus thick at base, tapered, flattened, and twisted toward tip, oblique; median apophysis small, with rounded distal process and long pointed basal process (Fig. 224). Epigynal hood with paired shallow cavities (Fig. 225); median septum slender anteriorly, broad and rounded posteriorly; copulatory tubes slender, arched; spermathecae long, club-shaped, smooth (Fig. 227).

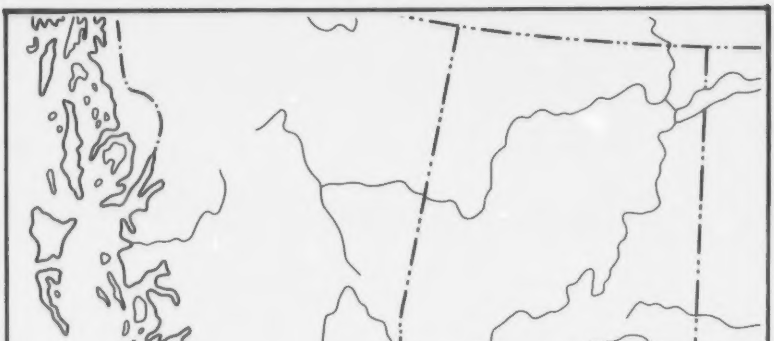
Comments. Members of the *P. solituda* group are distinguished from those of other groups in the genus *Pardosa* by the following characteristics: body and legs dark; legs with distal segments covered by long white setae; tibia I and II with 5 or 6 pairs of ventral macrosetae; median apophysis small, with short rounded distal process and long pointed basal process; median septum slender anteriorly and broad and rounded posteriorly; and spermathecae long and club-shaped. The lone member of the group was revised by Dondale and Redner (1987).

Pardosa solituda Levi & Levi

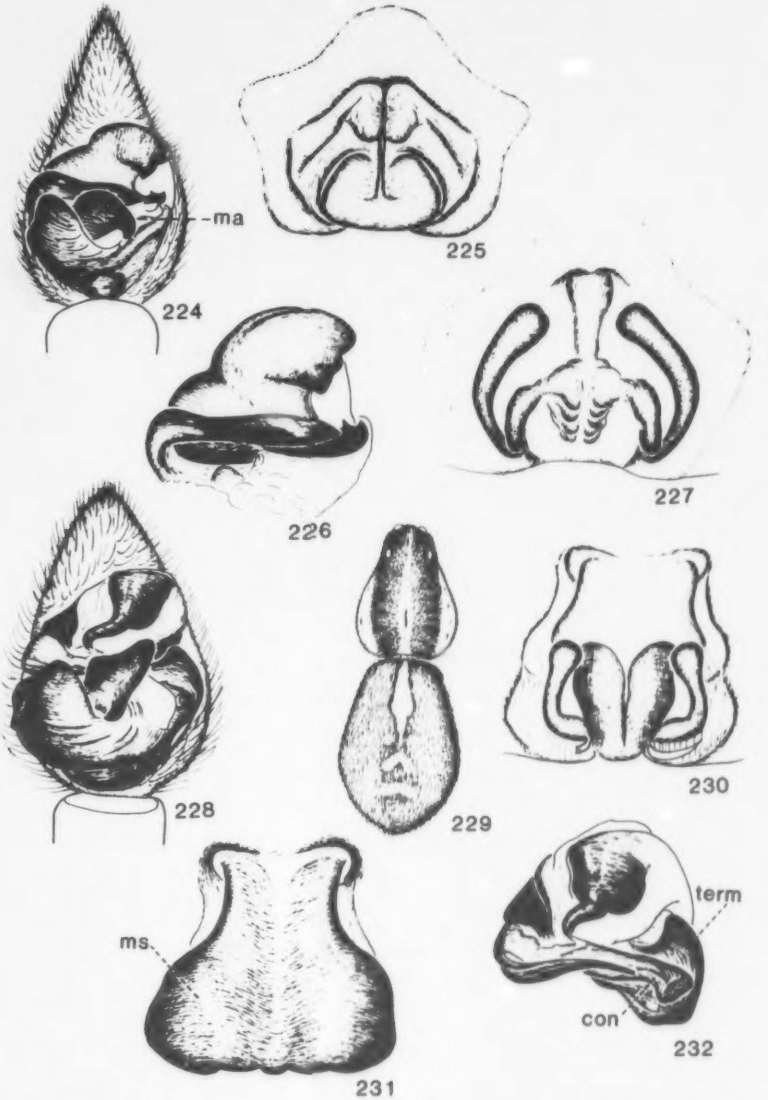
Figs. 224–227; Map 41

Pardosa solituda Levi and Levi, 1951:225, figs. 11, 16; Dondale and Redner 1987:13, figs. 15, 16, 35, 36.

Male. Total length 6.40–8.02 mm; carapace 3.68–4.13 mm long, 2.95–3.39 mm wide (5 specimens measured). Carapace dark brownish to black, without pale median or submarginal bands. Chelicerae dark brownish, with 3 retromarginal teeth. Sternum dark brownish. Legs dark brownish or reddish brown; distal segments covered with conspicuous long erect white setae; femora with black streaks dorsally; tibiae I and II with 5 or 6 pairs of long overlapping



Map 41. Collection localities of *Pardosa solituda* (●) and *P. anomala* (★).



Figs. 224–232. Structures of *Pardosa* spp. 224–227, *P. solituda*. 224, 226, palpus of male: 224, ventral view; 226, apical division, ventral view; 225, epigynum, ventral view; 227, spermathecae, dorsal view;; 228–232, *P. palustris*. 228, 232, palpus of male: 228, ventral view; 232, apical division, ventral view; 229, body of female, dorsal view; 230, spermathecae, dorsal view; 231, epigynum, ventral view. *con*, conductor; *ma*, median apophysis; *ms*, median septum; *term*, terminal apophysis.

ventral macrosetae. Abdomen blackish or dark gray; heart mark large, indistinct, brown; venter dull reddish or dull yellowish. Palpus dark reddish brown, with many long black setae; cymbium rather slender distally; palea concave, rather pale, with thickened distal margin, and with process at retrolateral margin (Fig. 224); process blunt, basally directed, tooth-like; terminal apophysis long, tapered, curved, with 2 minute teeth at tip; embolus thick at base, flattened distally, oblique, abruptly tapered at tip (Fig. 226); median apophysis short, broad, with 2 processes; distal process blunt; basal process long, stout, hooked (Fig. 224).

Female. Total length 8.00–10.70 mm; carapace 3.68–4.40 mm long, 3.05–3.35 mm wide (4 specimens measured). Coloration as in male; distal leg segments with erect white setae barely discernible; tibiae I and II with 5 or 6 pairs of long ventral macrosetae (as in male). Epigynum hooded; hood cavities paired, narrowly separated; atrium broad, shallow, fully occupied by median septum; median septum slender anteriorly, broad posteriorly, with low median crest extending anteriorly to tip (Fig. 225); copulatory openings inconspicuous, situated at sides of expanded part of median septum. Copulatory tubes long, rather slender, arched laterally; spermathecae large, club-shaped, smooth, extending anteriorly nearly to level of hood (Fig. 227).

Comments. Specimens of *P. solituda* are distinguished by the following characteristics: carapace dark, lacking pale longitudinal bands; distal leg segments with long erect white setae (more conspicuous in males); tibiae I and II with 4 or 5 pairs of long overlapping ventral macrosetae; palea with basally directed tooth-like process; median apophysis short and broad, with large hooked basal process; epigynal hood with paired, narrowly separated cavities; copulatory tubes arched, and spermathecae club-shaped.

Range. Southern Alberta, south to Utah and Colorado.

Biology. Adult males and females of *P. solituda* have been collected from June to August. Specimens have been found among stones, particularly talus, at elevations of 2900–3333 m.

The *Pardosa monticola* group

Description. Total length 5.3–7.0 mm. Carapace dark reddish brown; median and submarginal bands yellowish. Chelicerae and sternum reddish brown to black. Legs yellowish orange; tarsus I of males pale, swollen, fringed with pale setae. Abdomen reddish brown, with heart mark and median row of pale spots. Palpus of male hairy; palea with sclerite on surface; terminal apophysis massive, tooth-like (Fig. 232); embolus long, slender (Fig. 232); conductor ridge-like; median apophysis small, with 2 processes; distal process broad, flattened; basal process prominent, hooked at tip. Epigynal hood cavities paired, broad, well separated (Fig. 231); median septum massive, flat, angular, wide posteriorly (Fig. 231); copulatory tubes extending mesally, then far posteriorly, laterally, and finally anteriorly (Fig. 230); spermathecae small, bulbous or somewhat angular.

Comments. Members of the *P. monticola* group are distinguished from those of other groups in the genus *Pardosa* by the following characteristics: tarsus I of males swollen, pale, and fringed with pale setae; terminal apophysis massive and tooth-like; median apophysis with broad flattened distal process and prominent hooked basal process; median septum broad and angular; and copulatory tubes extending mesally, posteriorly, laterally, and finally anteriorly. The single North American species, *P. palustris* (Linnaeus), was revised by Dondale and Redner (1987).

Pardosa palustris (Linnaeus)

Figs. 228–232; Map 30

Aranea palustris Linnaeus, 1758:623.

Lycosa tarsalis Thorell, 1856:113; Palmgren 1939:54, figs. 56, 69, 84; Locket and Millidge 1951:259, figs. 123E, 124D, 126C, D, 127F.

Lycosa herbigrada Blackwall, 1857:285.

Lycosa palustris var. *islandica* Strand, 1906:471.

Pardosa andersoni Gertsch, 1934*a*:16; Gertsch and Wallace 1937:2, fig. 10.

Lycosa palustris: Holm 1947:28, figs. 12*b*, 52, 53 (pl. 5), 28 (pl. 10).

Pardosa tarsalis: Fox, 1937:114 (part).

Lycosa tarsalis var. *herbigrada*: Locket and Millidge 1951:261, figs. 121, 123F.

Pardosa palustris: Tongiorgi 1966*a*:283, figs. 84, 85, 91, 102, 103; 1966*b*:343, fig. 16; Dondale and Redner 1987:7, figs. 6, 9, 27–29.

Male. Total length 5.71 ± 0.42 mm; carapace 2.82 ± 0.21 mm long, 2.20 ± 0.16 mm wide (20 specimens measured). Carapace dark reddish brown; median and submarginal bands yellowish. Chelicerae reddish brown to black. Sternum dark reddish brown to black. Legs yellowish orange; femora with black longitudinal streaks; tarsal segments of leg I pale and somewhat swollen, fringed along margins with fine pale setae. Abdomen dull reddish brown, with median row with fine pale setae. Abdomen dull reddish brown, with median row of indistinct yellowish spots; heart mark large, pale; venter reddish. Palpus with patella and tibia covered with many long black setae; palea with large irregular sclerite on ventral surface; terminal apophysis massive, blunt, tooth-like (Fig. 232); embolus long, rather slender, approximately transverse; embolus partly concealed by median apophysis (ventral view, Fig. 232); conductor ridge-like, pale, with numerous small uneven teeth; tip of conductor lying on but not attached to surface of terminal apophysis; median apophysis small, with 2 processes; distal process broad, flattened; basal process prominent, hooked at tip (Fig. 228).

Female. Total length 6.42 ± 0.56 mm; carapace 2.86 ± 0.21 mm long, 2.27 ± 0.17 mm wide (20 specimens measured). Coloring as in male; carapace with pale submarginal bands often broader, extending to margins at several points (Fig. 229); tarsus I segments not swollen or fringed with fine pale setae. Epigynum hooded; hood cavities broad, paired, moderately deep, well separated; atrium broad, shallow, completely covered by median septum; median septum massive, rather flat, angular, widened in posterior two-thirds (Fig. 231); copulatory openings at sides of median septum, at approximately mid length. Copulatory tubes extending mesally, then far posteriorly, laterally, and finally anteriorly; spermathecae small, bulbous or somewhat angular, situated at level of copulatory openings (Fig. 230).

Comments. Specimens of *P. palustris* are distinguished from those of other groups in the genus *Pardosa* by the characters diagnostic for the *P. monticola* group.

Range. Alaska, Yukon Territory, and northern British Columbia; Iceland, Europe, and Asia.

Biology. Adults of *P. palustris* have been collected in May and June and females with egg sacs in June. Individuals were taken under stones above the timberline in mountain passes, along grassy margins of streams, and in tidal drift on a saltwater beach.

The *Pardosa modica* group

Description. Total length 6.1–9.2 mm. Carapace brown, reddish brown, or black; median band pale; submarginal bands pale, often represented by series of spots. Chelicerae and sternum reddish brown, yellowish, or black. Legs reddish, yellowish, or brown, usually hairy; femora usually with black rings. Abdomen grayish, brownish, or blackish, usually hairy. Palpus of male usually reddish brown;

palea flat or protruding; terminal apophysis stout, curved, rarely with tip hooked (Figs. 235, 255, 263, 291); conductor broad, usually flat; median apophysis small, usually seated in cavity of tegulum (Figs. 233, 254, 260, 267). Epigynal hood cavities paired, shallow, narrowly separated (Figs. 239, 259, 269, 278); atrium large, flask-shaped, often with paired small cavity sclerites; median septum occupying full or nearly full width of gap between ends of lateral sclerites; copulatory tubes slender, arched; spermathecae large, usually club-shaped (Figs. 237, 246, 262, 279).

Comments. Members of the *P. modica* group are distinguished from those of other groups in the genus *Pardosa* by the following characteristics: body and legs dark; submarginal bands sometimes broken into series of spots; terminal apophysis stout and curved; median apophysis rather small, seated in cavity on tegulum; epigynal hood with shallow, paired, narrowly separated cavities; atrium flask-shaped, often with paired small cavity sclerites; median septum occupying full or nearly full width of gap between posterior ends of lateral sclerites; copulatory tubes slender and arched; and spermathecae large and club-shaped. The group has not been revised totally, but Kronestedt (1975, 1981, 1986, 1988, and personal communication, 1989) has revised several of its members. It is represented in Canada and Alaska by 16 species.

Pardosa anomala Gertsch

Figs. 233–236; Map 41

Pardosa anomala Gertsch, 1933*a*:26, fig. 36.

Male. Total length 6.93 ± 0.35 mm; carapace 3.51 ± 0.19 mm long, 2.62 ± 0.13 mm wide (20 specimens measured). Carapace dark reddish brown to blackish; median band yellowish; submarginal bands yellowish, indistinct. Sternum yellowish brown to blackish. Chelicerae reddish brown to blackish. Legs yellowish orange; femora with several incomplete black rings. Abdomen brownish or blackish, sometimes darkened laterally; heart mark long; venter gray, dull red, or brownish. Palpus reddish brown; patella and tibia each with

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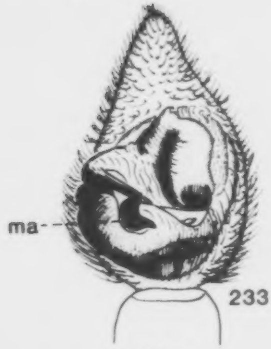
Figs. 233–241. Genitalia of *Pardosa* spp. 233–237, *P. anomala*. 233, 235, 236, palpus of male: 233, ventral view; 235, apical division, ventral view; 236, embolus, distal view; 234, epigynum, ventral view; 237, spermathecae, dorsal view. 238–241, *P. sodalis*. 238, 240, palpus of male: 238, ventral view; 240, apical division, ventral view; 239, epigynum, ventral view; 241, spermathecae, dorsal view. *e*, embolus; *h*, hood; *ma*, median apophysis; *ms*, median septum; *term*, terminal apophysis.



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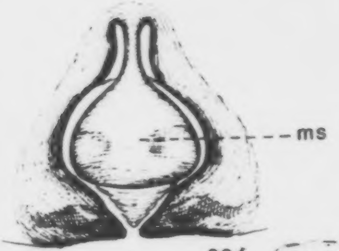

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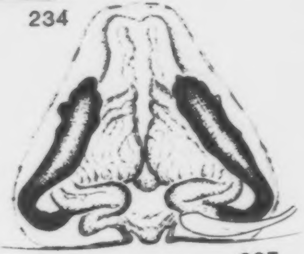

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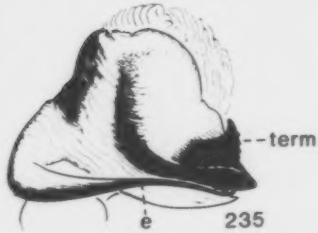

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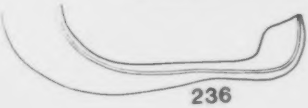

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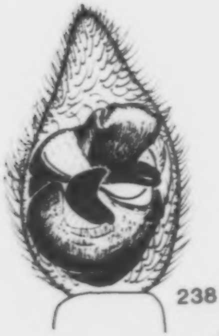

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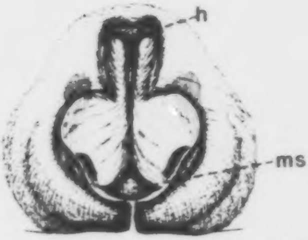

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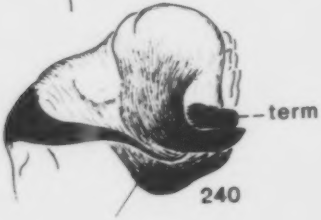

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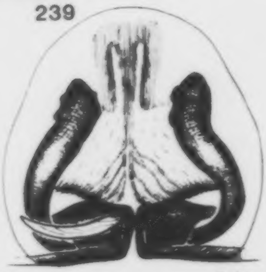

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extensive membranous area extending along inside curve of embolus, and with slender sclerotized band joining conductor (Fig. 233); terminal apophysis rather stout, curved, pointed; embolus long, slender, nearly straight, oblique; tip of terminal apophysis hyaline, rectangular (Fig. 236); conductor inconspicuous, lacking processes at tip; median apophysis small, seated in deep cavity on tegulum, with 2 processes; distal process short, blunt; basal process short, beak-like (Fig. 233).

Female. Total length 7.36 ± 0.80 mm; carapace 3.51 ± 0.23 mm long, 2.69 ± 0.17 mm wide (20 specimens measured). Coloration as in male; carapace with submarginal bands distinct; legs with tibiae, femora, and sometimes basitarsi with faint dark rings. Epigynum hooded; hood cavities paired, shallow; median septum prominent, flat, ovoid or somewhat triangular, with large dark lateral marks at copulatory openings; anterior part of median septum tapered, with lip-like process protruding from posterior margin (Fig. 234); copulatory openings at sides of broad part of median septum. Copulatory tubes rather broad, curving first posteromesally then anteromesally; spermathecae large, club-shaped, with few large nodules (Fig. 237).

Comments. Individuals of *P. anomala* are distinguished from those of the other species in the *P. modica* group by the following characteristics: body dark; male palpal patella and tibia each with dorsal fringe of white setae at tip; palea prominent with extensive membranous area extending along inner curve of embolus; embolus long, slender, nearly straight, oblique, with flattened tip; median apophysis small, seated in cavity of tegulum, with short distal process and beak-like basal process; median septum ovoid or triangular, with lip-like process at posterior margin; and spermathecae large, club-shaped, with a few large nodules.

Range. Southern British Columbia and southern Alberta, south to Utah.

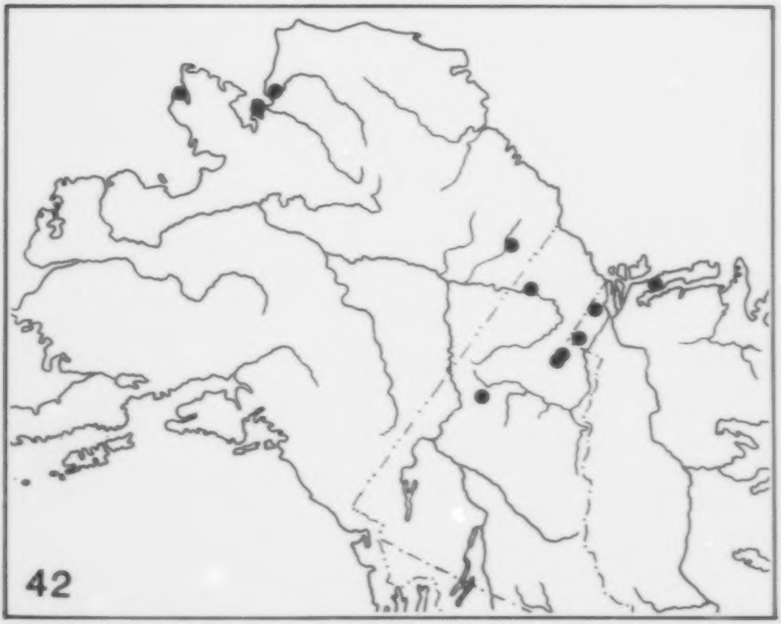
Biology. Levi and Levi (1951) collected specimens among rocks near the timberline in Wyoming.

Pardosa sodalis Holm

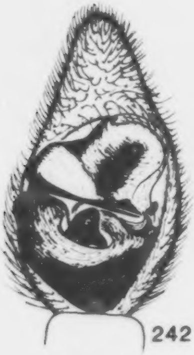
Figs. 238–241; Map 42

Pardosa sodalis Holm, 1970:204, fig. 37; Kronestedt 1986:230, figs. 1, 2*c*, 3*c*, 4C, 4*c*, 5*d*, 6*d*, 7*c*, 8*c*, 9*c*, 12*c–f*, 13.
Pardosa bargusinensis Šternbergs, 1979:89, figs. 1*d*, 1*e*, 1*zh*.

Male. Total length 7.39 ± 0.54 mm; carapace 3.58 ± 0.19 mm long, 2.68 ± 0.17 mm wide (16 specimens measured). Carapace brownish; median band light brown to yellowish, enclosing pair of large brown spots anterior to dorsal groove; submarginal bands light brown to yellowish. Chelicerae yellowish brown, with darker longitudinal streaks. Sternum dusky brown, with paler median stripe anteriorly. Legs brownish; femora, patellae, and tibiae with yellowish longitudinal streaks dorsally. Abdomen grayish brown, with paired rows of dark spots; heart mark light brown; venter grayish brown. Terminal apophysis somewhat tooth-like, directed retrolaterally, curved ventrally (Fig. 240); embolus long, slender, somewhat sinuous, somewhat oblique; conductor large, somewhat angular on basal margin, with 2 curved processes; basal process with small crest



Map 42. Collection localities of *Pardosa sodalis*.



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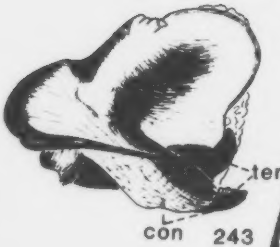

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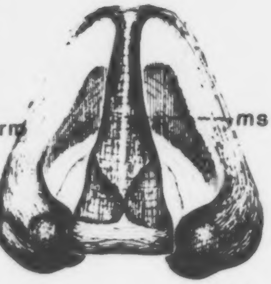

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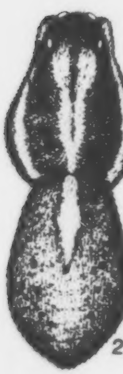

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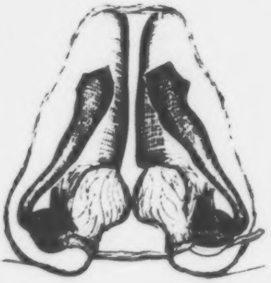

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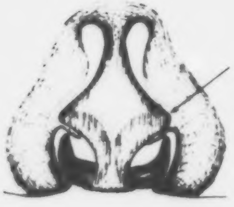

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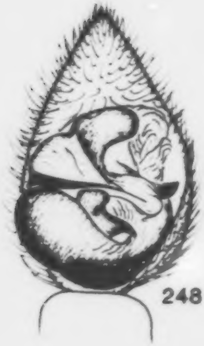

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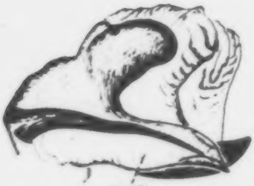

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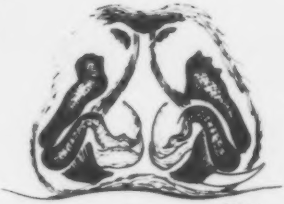

250

(Fig. 240); median apophysis rather large, with 2 processes; distal process beak-like; basal process broad, pointed (Fig. 238).

Female. Total length 7.35 ± 0.91 mm; carapace 3.43 ± 0.31 mm long, 2.56 ± 0.29 mm wide (12 specimens measured). Coloration as in male, but abdominal venter light brown. Epigynum with atrium short, barely longer than wide; median septum rather narrow throughout except posteriorly; posterior expanded part rather small, triangular, and barely extending between lateral sclerites; cavity sclerites oblique, with anterior margins extending anterolaterally (Fig. 239). Spermathecae long, curved, club-shaped (Fig. 241).

Comments. Specimens of *P. sodalis* are distinguished by the following characteristics: terminal apophysis tooth-like, retrolaterally directed; embolus slender; conductor large, with 2 curved processes and an angular basal margin; atrium short; and median septum sinuous, with small triangular basal part that barely extends between the lateral sclerites of the epigynum.

Range. Alaska, Yukon Territory, and western Northwest Territories; Siberia.

Biology. Individuals of *P. sodalis* have been collected in peat moss on larch and spruce bogs, in talus slopes, and among low shrubs on tundra.

Pardosa furcifera (Thorell)

Figs. 242–246; Map 43

Lycosa furcifera Thorell, 1875:499.
Pardosa furcifera: Simon 1898:359; Holm 1967:73, fig. 90.

Male. Total length 7.69 ± 0.53 mm; carapace 3.63 ± 0.30 mm long, 2.76 ± 0.28 mm wide (20 specimens measured). Carapace dark reddish brown; median band distinct, broad, yellowish; submarginal bands yellowish. Sternum dark reddish brown, usually with pale midstripe anteriorly. Chelicerae yellowish, with lateral reddish brown or black markings. Legs with distal segments reddish; femora

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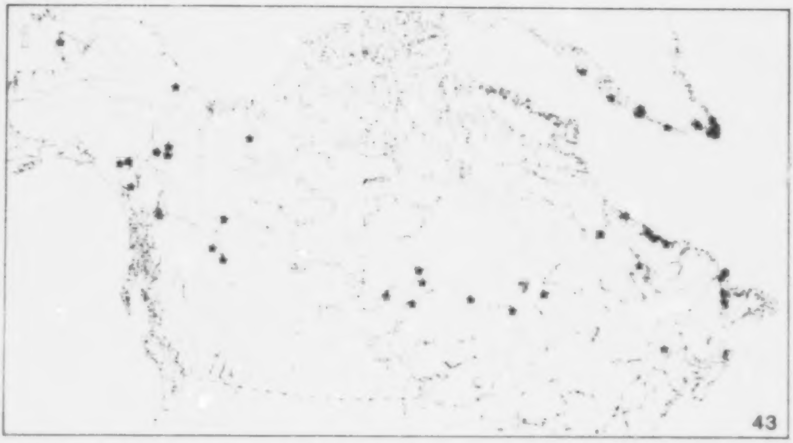
Figs. 242–250. Structures of *Pardosa* spp. 242–246, *P. furcifera*. 242, 243, palpus of male: 242, ventral view; 243, apical division, ventral view; 244, epigynum, ventral view; 245, body of female, dorsal view; 246, spermathecae, dorsal view. 247–250, *P. labradorensis*. 247, epigynum, ventral view; 248, 249, palpus of male: 248, ventral view; 249, apical division, ventral view; 250, spermathecae, dorsal view. *con*, conductor; *ms*, median septum; *term*, terminal apophysis.



Map 43. Collection localities of *Pardosa furcifera*.

yellowish, marked with reddish brown or black dorsally. Abdomen dark brownish or dull reddish; heart mark long, distinct; venter dark reddish. Palpus yellowish or reddish; tibia hairy; cymbium dark reddish to black; palea prominent, rugose, with oblique sclerotized channel (Figs. 242, 243); terminal apophysis arising near tips of embolus and conductor, with two stout curved processes at tip (Fig. 243); embolus moderately long, slender, nearly straight, oblique; conductor long, broad, somewhat transparent, with edges raised (Fig. 243); median apophysis small, with short pointed distal and basal processes (Fig. 242).

Female. Total length 7.95 ± 0.73 mm; carapace 3.69 ± 0.21 mm long, 2.82 ± 0.19 mm wide (20 specimens measured). Coloration as in male (Fig. 245). Epigynum hooded; hood cavities paired, shallow (Fig. 244); median septum tapering anteriorly, with paired dorsal excavations showing through and marking off rectangular area at posterior end; copulatory openings situated at sides of median septum, immediately anterior to cavity sclerites. Copulatory tubes slender, slightly swollen, extending laterally then abruptly anteromesally; spermathecae long, club-shaped, with few small nodules (Fig. 246).

Comments. Individuals of *P. furcifera* are distinguished from those of the other members of the *P. modica* group by the following characteristics: palea prominent, rugose, with oblique sclerotized channel; terminal apophysis with 2 stout processes at tip; conductor long, broad, with raised margins; median apophysis with short distal and basal processes; median septum with paired dorsal excavations marking off a rectangular area at posterior end; and spermathecae club-shaped, with a few small nodules.

Range. Alaska to Newfoundland; Greenland, possibly Iceland but based on old records only.

Biology. Adult males have been collected from mid June to July and adult females from mid June to August. Egg sacs were recorded in July, and females with newly emerged young on their backs were found at Churchill, Man., in mid August. Individuals were found in spruce–pine forests, in willow clumps near the timberline, and on moss and stones in alpine tundra.

Pardosa labradorensis (Thorell)

Figs. 247–250; Map 44

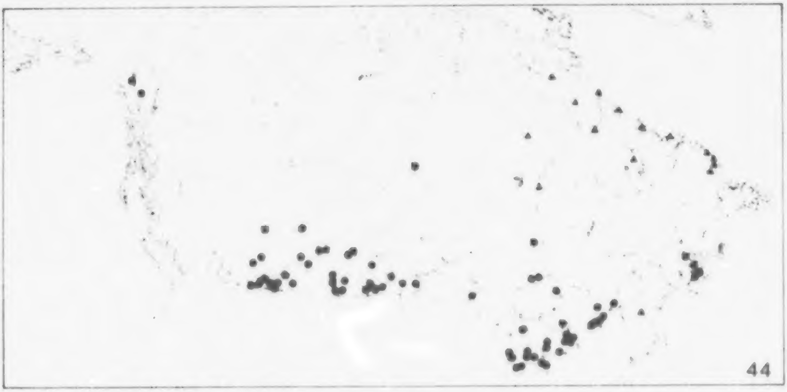
Lycosa labradorensis Thorell, 1875:502.

Pardosa labradorensis: Chamberlin 1908:205; Kronestedt 1981:119, figs. 3*b*, 4*b*, 5C, 5*c*, 6*b*, 6*c*, 7*b*, 8.

Pardosa lengi Gertsch, 1933*a*:23, figs. 24, 34.

Male. Total length 6.29 ± 0.82 mm; carapace 2.98 ± 0.37 mm long, 2.15 ± 0.23 mm wide (11 specimens measured). Carapace brownish, setaceous; median band broken, yellowish; submarginal bands unbroken. Chelicerae yellowish brown, with darker streaks. Sternum dusky brown; median band lighter. Legs light brown, without dark rings; femora, patellae, and tibiae with indistinct dark and light longitudinal bands. Abdomen brown to grayish, setaceous; heart mark lighter; venter light brown to grayish. Terminal apophysis long, stout, curved; embolus long, slender, tapered, nearly straight; conductor somewhat transparent, approximately transverse, broad, lying along basal margin of palea, with tip folded (Fig. 249); median apophysis with 2 processes; distal process enlarged, blunt; basal process small, hooked (Fig. 248).

Female. Total length 7.13 ± 0.71 mm; carapace 3.31 ± 0.23 mm long, 2.49 ± 0.16 mm wide (20 specimens measured). Coloration essentially as in male; submarginal bands wider; sides and venter of abdomen with white pubescence. Epigynum approximately as long as wide; atrium indistinct, approximately as long as wide; median septum with anterior part rather short; anterior margins of cavity sclerites extending anterolaterally in a curve (Fig. 247). Spermathecae long, club-shaped, angled near tips, with minute prominences on tip (Fig. 250).



Map 44. Collection localities of *Pardosa labradorensis* (▲) and *P. modica* (●).

Comments. Specimens of *P. labradorensis* are distinguished by the following characteristics: conductor somewhat transparent, lying transversely, and folded at tip; median apophysis with large blunt distal process and small hooked basal process; atrium approximately as wide as long; anterior part of median septum narrowed, short; and anterior margins of cavity sclerites extending anterolaterally in a curve.

Range. Baffin Island, northern Quebec, Labrador, and Mount Washington, N.H.

Biology. Individuals of *P. labradorensis* are found on stony beaches in Labrador and on stony ground above the timberline on Mount Washington. Adults of both sexes were collected in June and July.

Pardosa modica (Blackwall)

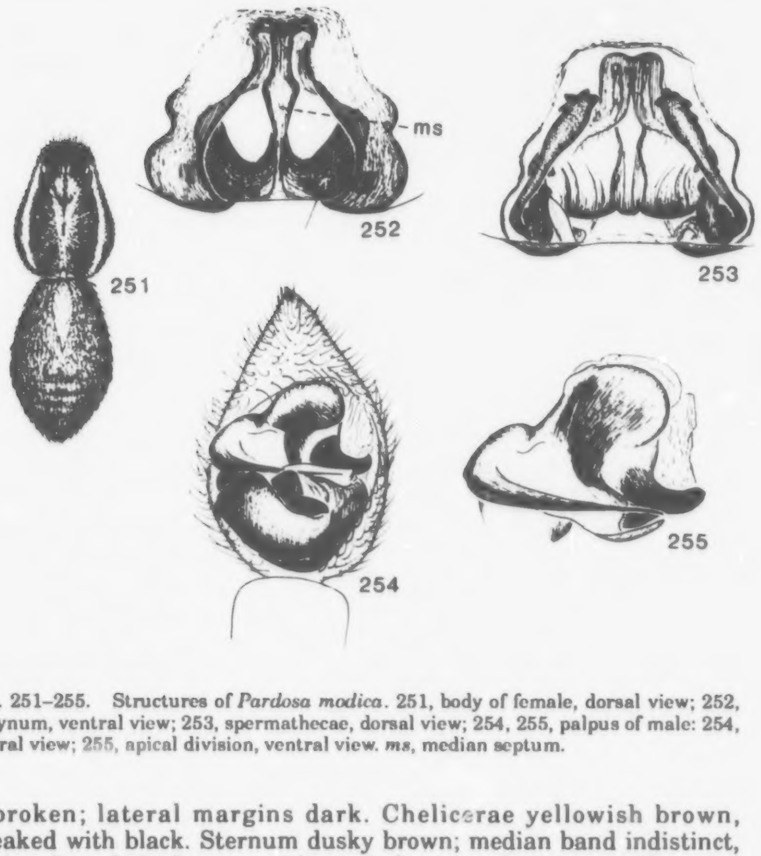
Figs. 251–255; Map 44

Lycosa modica Blackwall, 1846:33.

Pardosa brunnea Emerton, 1885:495, fig. 4*b* (pl. 48).

Pardosa modica: Chamberlin 1908:202, figs. 3, 4 (pl. 15); Kaston 1948:336, fig. 1128 (pl. 58); Kronestedt 1981:112, figs. 1, 2*a*, 3*a*, 4*a*, 5A, 5*a*, 5B, 5*b*, 6*a*, 7*a*, 8.

Male. Total length 6.71 ± 0.51 mm; carapace 3.36 ± 0.29 mm long, 2.41 ± 0.21 mm wide (20 specimens measured). Carapace brownish; median bands broken, yellowish; submarginal bands



Figs. 251–255. Structures of *Pardosa modica*. 251, body of female, dorsal view; 252, epigynum, ventral view; 253, spermathecae, dorsal view; 254, 255, palpus of male: 254, ventral view; 255, apical division, ventral view. *ms*, median septum.

unbroken; lateral margins dark. Chelicerae yellowish brown, streaked with black. Sternum dusky brown; median band indistinct, lighter. Legs light brown, without dark rings; femora, patellae, and tibiae with indistinct light and dark longitudinal stripes. Abdomen hairy, grayish brown, mottled laterally with lighter brown; heart mark paler; venter light brown. Terminal apophysis long, stout, curved distally, lying near tip of embolus (Fig. 255); embolus long, slender, tapered, nearly straight, somewhat oblique; conductor broad, oblique, with curved process at tip; median apophysis rather small (Fig. 254).

Female. Total length 6.93 ± 0.45 mm; carapace 3.17 ± 0.28 mm long, 2.27 ± 0.22 mm wide (20 specimens measured). Coloration essentially as in male; carapace with submarginal bands wider than in male and continuing farther anteriorly (Fig. 251); abdomen with venter pale yellowish, often darker mesally, covered with white pubescence. Epigynum with atrium approximately as long as wide; median septum with anterior narrow part rather short; anterior margins of cavity sclerites oblique (extending anterolaterally) (Fig. 252). Spermathecae long, rather slender, club-shaped, with few nodules at tips (Fig. 253).

Comments. Specimens of *P. modica* are distinguished by the following characteristics: terminal apophysis stout; conductor lying distal to basal margin of apical division; median apophysis small; epigynal atrium approximately as wide as long; and epigynal median septum with anterior narrowed part short and with anterior margins of cavity sclerites extending anterolaterally.

Range. Southern Yukon Territory to Nova Scotia, south to Connecticut.

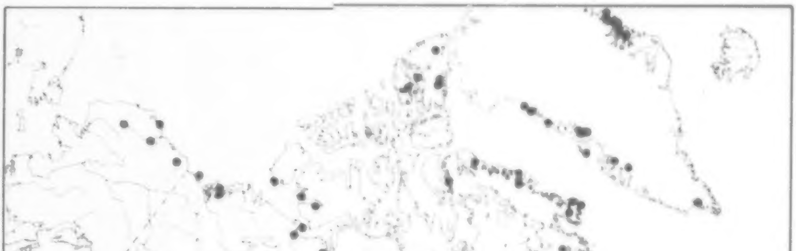
Biology. Individuals of *P. modica* are found in swamps, salt marshes, and meadows. Adults of both sexes are collected from April to July. Kaston (1936) described the mating behavior.

Pardosa glacialis (Thorell)

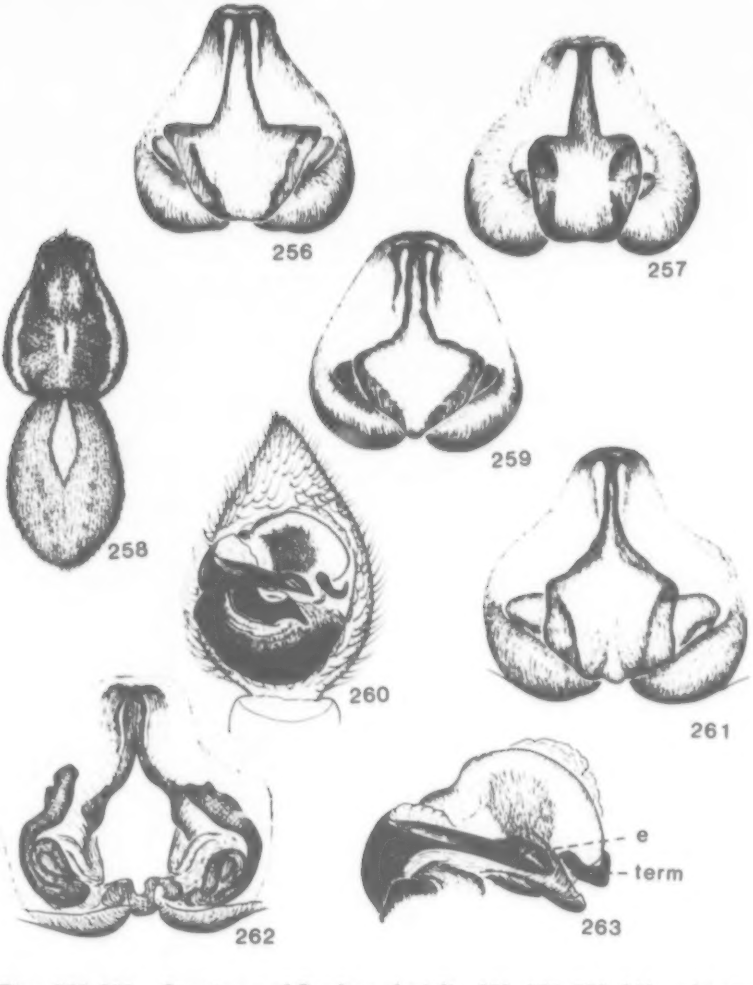
Figs. 256–263; Map 45

Lycosa glacialis Thorell, 1872*a*:159.
Lycosa aquilonaris L. Koch, 1874:400.
Pardosa glacialis: Calloni 1890:139; Holm 1967:75, figs. 91, 92.
Pardosa umanaki Gertsch, 1933*a*:23, figs. 23, 43.

Male. Total length 6.40 ± 0.35 mm; carapace 3.18 ± 0.20 mm long, 2.44 ± 0.15 mm wide (20 specimens measured). Carapace dark



Map 45. Collection localities of *Pardosa glacialis*.



Figs. 256–263. Structures of *Pardosa glacialis*. 256, 257, 259, 261, epigynums, ventral view; 258, body of female, dorsal view; 260, 263, palpus of male: 260, ventral view; 263, apical division, ventral view; 262, spermathecae, dorsal view. *e*, embolus; *term*, terminal apophysis.

reddish brown to black, with many fine black lines; median band pale, indistinct, obliterated anterior to dorsal groove; submarginal bands pale, indistinct. Chelicerae dark reddish brown, with several black longitudinal lines; retromargin with 3 teeth. Sternum blackish. Legs dark reddish brown; femora and tibiae with black longitudinal lines or stripes. Abdomen setaceous, black; heart mark large, indistinct, grayish; venter dull reddish black. Palpus with many long black setae; palea rather flat, extensively sclerotized; terminal apophysis arising retrolaterally on palea; terminal apophysis stout, free, hooked at tip (Figs. 260, 263); embolus broad, flat, straight, truncate, and partly twisted at tip; conductor broad, somewhat concave, truncate at tip; median apophysis small, with 2 processes; distal process short, blunt; basal process long, beak-like (Fig. 260).

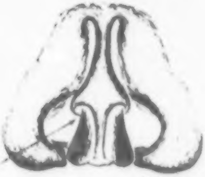
Female. Total length 7.28 ± 0.88 mm; carapace 3.16 ± 0.20 mm long, 2.47 ± 0.16 mm wide (20 specimens measured). Coloration as in male but pale bands on carapace more distinct (Fig. 258). Epigynum hooded; hood cavities small, paired; atrium broad, shallow; median septum with slender anterior piece; posterior piece of median septum broader, with somewhat angular lateral margins (Figs. 256, 257, 259, 261); copulatory openings broad, at sides of median septum. Copulatory tubes long, slender, extending first posteromesally then anterolaterally; spermathecae elongate, club-shaped, each with several nodules (Fig. 262).

Comments. Specimens of *P. glacialis* are distinguished from those of the other members of the *P. modica* group by the following characteristics: legs dark, without black rings; abdomen setaceous; terminal apophysis free and hooked; embolus broad, flat, straight, and having a partial twist at the tip; median apophysis with blunt distal process and long beak-like basal process; conductor broad, concave, and truncate; median septum with angular posterior piece; and copulatory tubes long, slender, extending first posteromesally and then anterolaterally. The high variability of the epigynum does not appear to be clinal in nature nor the result of habitat differences.

Range. Northern Alaska to Ellesmere Island and Baffin Island, south to northern Manitoba and northern Quebec; Greenland.

Biology. Mature males and females of *P. glacialis* were collected from June to August, and egg sacs were found in July and August. Individuals were commonly collected in heaths and sedge meadows, among lichens and low shrubs, and on beaches or bare soil on arctic tundra. Hillyard (1979) recorded habitats at Pangnirtung Fjord on Baffin Island. Leech (1966) studied various aspects of the ecology and behavior of this spider on Ellesmere Island.

Figs. 264–273. Structures of *Pardosa* spp. 264–268, *P. podhorskii*. 264, epigynum, ventral view; 265, spermathecae, dorsal view; 266, body of female, dorsal view; 267, 268, palpus of male: 267, ventral view; 268, apical division, ventral view. 269–273, *P. algens*. 269, epigynum, ventral view; 270, spermathecae, dorsal view; 271, body of female, dorsal view; 272, 273, palpus of male: 272, ventral view; 273, apical division, ventral view. *con*, conductor; *term*, terminal apophysis.



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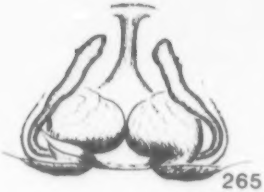

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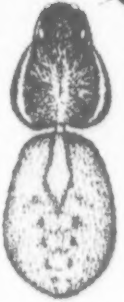

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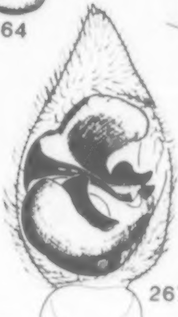

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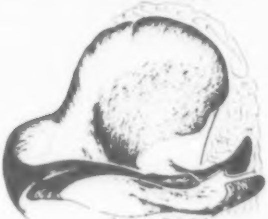

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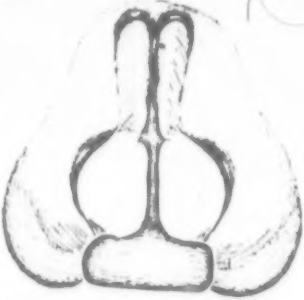

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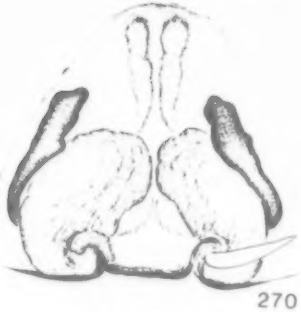

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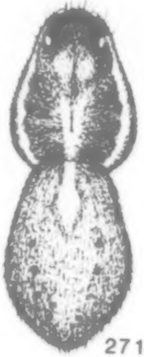

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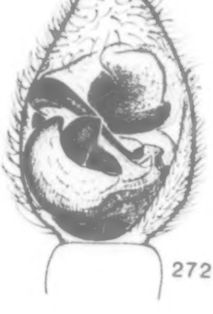

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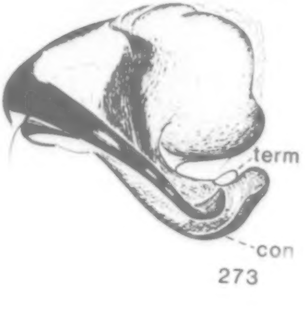

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Pardosa algens (Kulczyński)

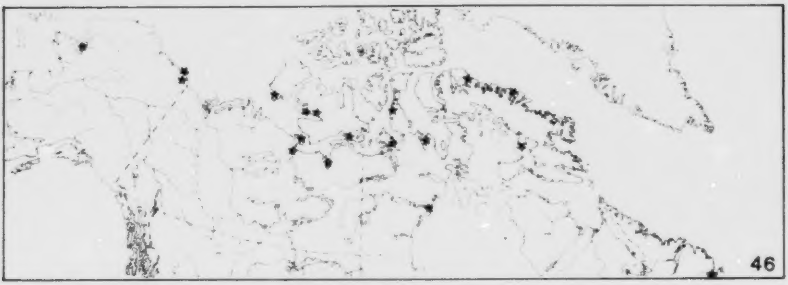
Figs. 269–273; Map 46

Lycosa algens Kulczyński, 1908:93, fig. 111 (pl. 3).
Pardosa johanseni Gertsch, 1933*a*:21, fig. 39.
Pardosa townsendi Gertsch, 1933*a*:22, fig. 26.
Pardosa algens: Roewer 1954:157; Holm 1970:201, figs. 32, 33; Kronestedt 1986:216, figs. 1, 2*a*, 3*a*, 4A, 4*a*, 5*a*, 5*b*, 6*a*, 6*b*, 7*a*, 7*b*, 8*a*, 9*a*, 10, 11, 13.

Male. Total length 7.76 ± 0.62 mm; carapace 3.59 ± 0.22 mm long, 2.75 ± 0.17 mm wide (20 specimens measured). Carapace brownish; median and submarginal bands light brown to yellowish. Chelicerae yellowish basally, brownish distally, with brownish longitudinal streaks. Sternum dusky brown; anterior sternum with faint pale median stripe. Legs brownish, with yellowish patches retrolaterally; femora, patellae, and tibiae with brown to yellowish longitudinal marks dorsally. Abdomen grayish brown, with paired darker spots in longitudinal rows; heart mark dark; venter grayish brown. Terminal apophysis broadly joined to palea; tip of terminal apophysis small, rounded, lying beside (and largely concealed by) conductor (Fig. 273); embolus long, nearly straight, oblique, rather stout, with tip angled abruptly (Figs. 272, 273); conductor large, curved, concave, with sclerotized piece lying within curve (Fig. 273); median apophysis rather large, with 2 processes; basal process pointed; distal process larger, more rounded (Fig. 272).

Female. Total length 8.17 ± 1.07 mm; carapace 3.38 ± 0.28 mm long, 2.65 ± 0.21 mm wide (20 specimens measured). Coloration essentially as in male; submarginal carapace bands bright yellow and covered with white setae (Fig. 271); leg femora with yellowish retrolateral markings more extensive. Epigynum with atrium longer than wide, widening at anterior end; median septum slender in anterior two-thirds, usually straight, with small angular expansion near middle of slender part; posterior part of median septum broad, angular or rounded; cavity sclerites barely visible (Fig. 269). Spermathecae rather short, thick, curved, extending a little anterior to expanded part of atrium (Fig. 270).

Comments. Specimens of *P. algens* are distinguished by the following characteristics: terminal apophysis with small rounded tip; conductor large, concave, with sclerotized piece lying within the curve; median septum slender, with posterior part broad, angular or rounded; cavity sclerites minute; and spermathecae barely extending anterior to expanded part of atrium.



Map 46. Collection localities of *Pardosa algens*.

Range. Northern Alaska to Baffin Island and easternmost Quebec; Siberia, and Kamchatka.

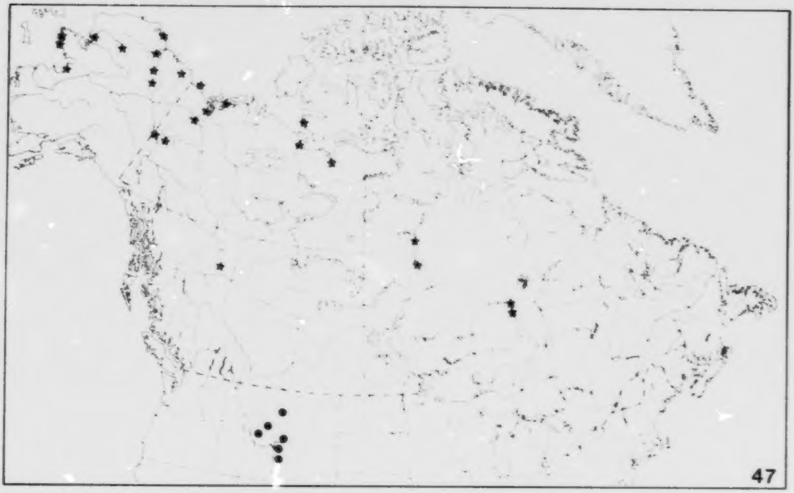
Biology. North American individuals of *P. algens* are found on arctic tundra.

Pardosa podhorskii (Kulczyński)

Figs. 264–268; Map 47

Lycosa podhorskii Kulczyńskii, 1907:588, figs. 20, 23, 29 (pl. 21).
Pardosa podhorskii: Charitonov 1932:48; Holm 1970:203, figs. 34–36.
Pardosa varians Gertsch, 1933*a*:19, figs. 29, 32.
Pardosa gertschi Chamberlin and Ivie, 1947:19, fig. 90 (pl. 10).

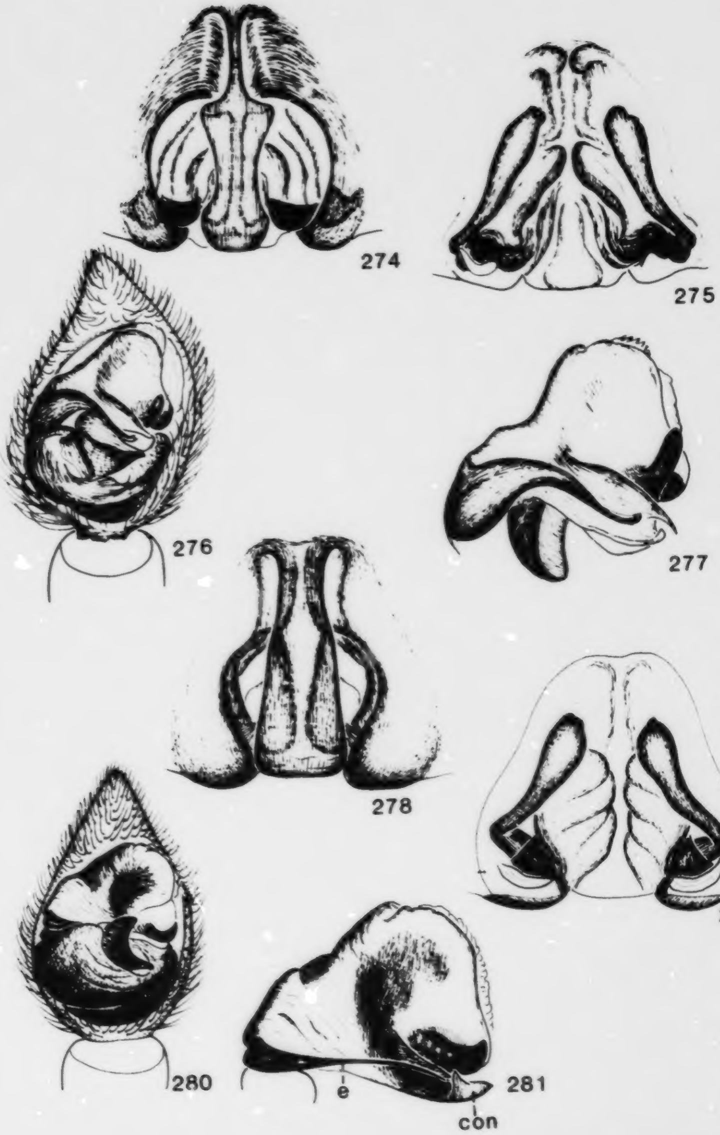
Male. Total length 6.53 ± 0.58 mm; carapace 3.15 ± 0.30 mm long, 2.35 ± 0.13 mm wide (20 specimens measured). Carapace reddish brown; median and submarginal bands indistinct, pale. Sternum dark reddish brown. Chelicerae yellowish brown or reddish brown, hairy. Legs reddish brown; femora sometimes darkened ventrally, usually with darker longitudinal streaks. Abdomen reddish gray; heart mark long, pale; venter dull red to gray. Palpus reddish brown; tibia hairy; palea prominent distally, concave basally, with sclerite; sclerite curved, flat, joining conductor; terminal apophysis rather long, slender, somewhat curved; embolus long, curved, somewhat sinuous, oblique, spoon-shaped at tip (Fig. 268); conductor long, broad, with tip curved (Fig. 268); median apophysis small, seated in cavity on tegulum, with 2 processes; distal and basal processes short, pointed, of approximately equal length (Fig. 267).



Map 47. Collection localities of *Pardosa podhorskii* (★) and *P. tetonensis* (●).

Female. Total length 6.99 ± 0.62 mm; carapace 3.11 ± 0.17 mm long, 2.39 ± 0.18 mm wide (20 specimens measured). Coloration as in male; median and submarginal bands more distinct (Fig. 266). Epigynum hooded; hood cavities paired, shallow (Fig. 264); median septum prominent, flat, rather narrow anteriorly, widened at mid length and in posterior third, with pair of sockets near mid length; copulatory openings situated at posterior margin of atrium. Copulatory tubes abruptly narrowing, first extending laterally, then arched anteromesally; spermathecae long, club-shaped, with few nodules (Fig. 265).

Comments. Individuals of *P. podhorskii* are distinguished from those of the other members of the *P. modica* group by the following characteristics: palea prominent distally and concave basally; terminal apophysis long, slender, and somewhat curved; embolus long, slender, oblique, spoon-shaped at tip; conductor broad and curved at tip; median apophysis small, with short pointed distal and basal processes; epigynal median septum expanded at mid length and near posterior end, with paired socket-like cavities near mid length; copulatory tubes slender and extending first laterally, then arching anteromesally; and spermathecae long, club-shaped, and having few nodules. The range of *P. podhorskii* (Map 47) includes the lowlands bordering the western shore of Hudson Bay; males from this latter region possess a narrow pointed conductor and may represent a separate species. Further collecting and study are needed to determine the specific status of these specimens.



Figs. 274–281. Genitalia of *Pardosa* spp. 274–277, *P. tetonensis*. 274, epigynum, ventral view; 275, spermathecae, dorsal view; 276, 277, palpus of male: 276, ventral view; 277, apical division, ventral view. 278–281, *P. sinistra*. 278, epigynum, ventral view; 279, spermathecae, dorsal view; 280, 281, palpus of male: 280, ventral view; 281, apical division, ventral view. *con*, conductor; *e*, embolus.

Range. Alaska to northern Ontario; Siberia.

Biology. Adult males and females of *P. podhorskii* have been collected from late May to August. Egg sacs were recorded in July, and a female with young spiderlings on her back was collected in early August. Collections were made among shrubs and grass tussocks on tundra.

Pardosa tetonensis Gertsch

Figs. 274–277; Map 47

Pardosa tetonensis Gertsch, 1933*a*:19, figs. 28, 38; Kronestedt 1988:411, figs. 1*a*, 2*a*, 3A, 3*a*, 3B, 3*b*, 4*a*, 4*d*, 5*a*, 5*b*, 6*a*, 6*c*, 7*a*, 8*a*–8*d*, 9, 12.

Male. Total length 5.92–6.60 mm; carapace 2.96–3.76 mm long, 2.32–2.50 mm wide (6 specimens measured). Carapace reddish brown; median and submarginal bands distinct, yellow. Sternum reddish brown; anterior sternum with indistinct yellow midstripe. Chelicerae yellowish. Legs brownish orange dorsally, paler ventrally; femora somewhat darkened dorsally. Abdomen yellowish orange, with several indistinct narrow chevrons; heart mark large, pale; venter pale. Palea rather prominent, with stout basal process (Fig. 277); terminal apophysis long, stout, curved; embolus long, slender, oblique, somewhat flattened toward tip, with bulge at base; conductor long, broad, with pointed process and with folded margin at tip (Fig. 277); median apophysis seated in cavity of tegulum, with 2 processes; distal process short, blunt, tapered; basal process slender, pointed (Fig. 276).

Female. Total length 7.20 mm; carapace 3.15 mm long, 2.25 mm wide (1 specimen measured). Coloration much as in male; carapace bands less distinct; legs with indistinct dark rings. Epigynum with prominent hood; median septum slender anteriorly, with moderately wide angular expansions near mid length and at posterior end (Fig. 274). Copulatory tubes broad; spermathecae long, club-shaped, with several nodules (Fig. 275).

Comments. Males of *P. tetonensis* are distinguished from those of other species in the *P. modica* group by the following characteristics: palea with stout basal process; terminal apophysis large and curved; embolus bulged at base; and conductor having a pointed process and folded margin at tip. Females are distinguished by the shape of the median septum, which is slender anteriorly and has moderately wide expansions at mid length and at the posterior end.

Range. Montana and Wyoming.

Biology. Specimens have been collected along creeks, in alpine meadows, and on dry mountain slopes in the Rocky Mountains. Adult males were collected from mid June to early August, and adult females from mid June to late August.

Pardosa sinistra (Thorell)

Figs. 278–281; Map 48

Lycosa sinistra Thorell, 1877:517.

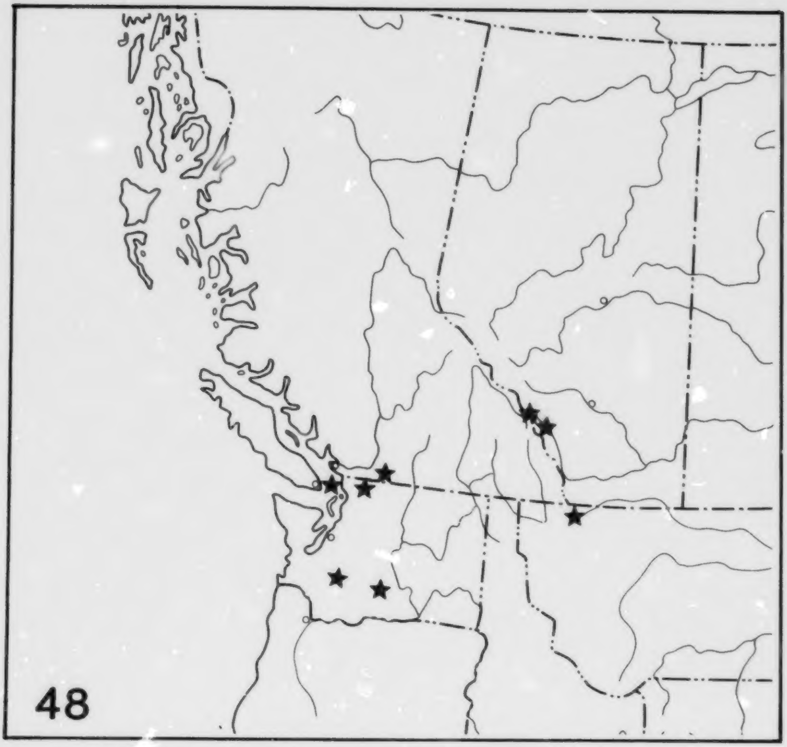
Pardosa sinistra: Roewer 1954:194; Kronestedt 1981:121, figs. 2*b*, 3*c*, 4*c*, 5D, 5*d*, 6*d*, 6*e*, 7*c*, 8.

Pardosa cascadae Schenkel, 1951:25, fig. 35.

Male. Total length 8.53 ± 0.50 mm; carapace 4.24 ± 0.34 mm long, 3.71 ± 0.14 mm wide (9 specimens measured). Carapace dusky brown; median band broken, brownish; submarginal bands broken, represented by 3 spots. Chelicerae brown, with darker streaks. Sternum dusky brown, sometimes with pale median band. Legs dusky brown, usually with lighter rings. Abdomen dark grayish; heart mark brown; venter dusky brown, with yellowish dots. Terminal apophysis large, curved distally, arising near tip of conductor (Fig. 281); embolus long, essentially transverse, somewhat curved; conductor broad, with hooked point; median apophysis moderately large, with distal process and basal process approximately equal in length (Fig. 280).

Female. Total length 8.76 ± 0.69 mm; carapace 4.19 ± 0.29 mm long, 3.15 ± 0.26 mm wide (20 specimens measured). Coloration essentially as in male; submarginal bands represented by spots; spots sometimes partly joined; legs with pale rings more distinct than in males. Epigynum with atrium distinctly longer than wide; median septum rather broad throughout, nearly parallel at sides (Fig. 278). Spermathecae long, club-shaped, with small prominences at tip (Fig. 279).

Comments. Specimens of *P. sinistra* are distinguished by the following characteristics: carapace with broken submarginal bands; conductor with hooked point; median apophysis large, with distal and basal processes approximately equal in length; atrium distinctly longer than wide; and median septum nearly parallel at sides.

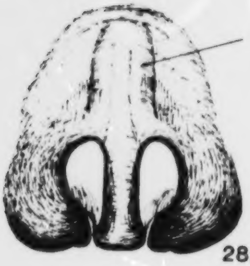


Map 48. Collection localities of *Pardosa sinistra*.

Range. British Columbia and Alberta, south to Colorado.

Biology. Adults have been collected from June to August at elevations of 2000–4100 m, usually on rocky ground. Two collections were made on old snow in July or August.

Figs. 282–291. Structures of *Pardosa* spp. 282–285, *P. wyuta*. 282, epigynum, ventral view; 283, spermathecae, dorsal view; 284, 285, palpus of male: 284, ventral view; 285, apical division, ventral view. 286–291, *P. albomaculata*. 286, 290, 291, palpus of male: 286, embolus, distal view; 290, palpus, ventral view; 291, apical division, ventral view; 287, epigynum, ventral view; 288, spermathecae, dorsal view; 289, body of female, dorsal view. *con*, conductor.



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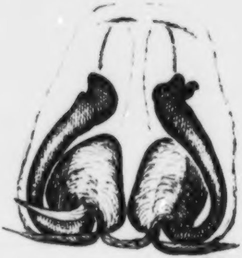

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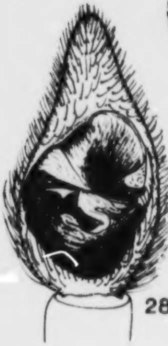

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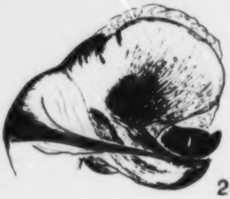

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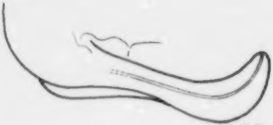

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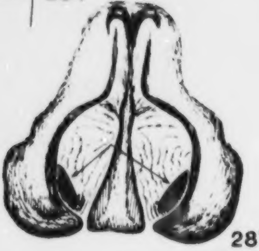

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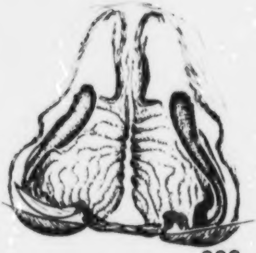

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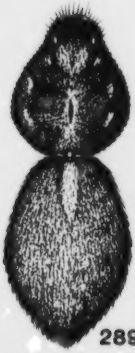

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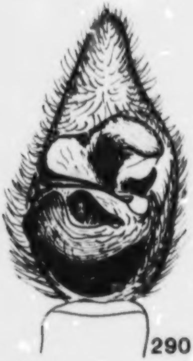

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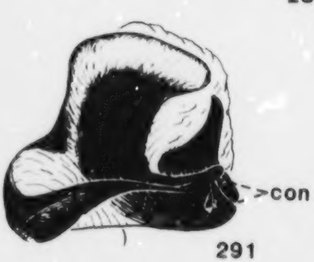

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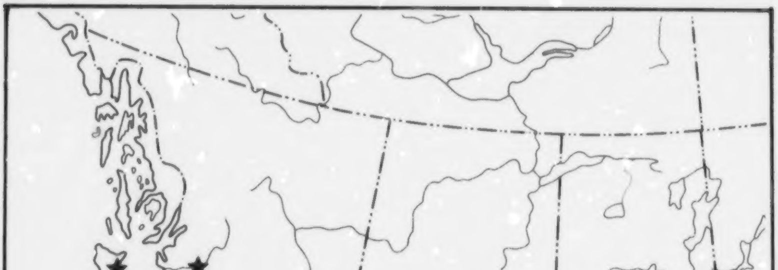
Pardosa wyuta Gertsch

Figs. 282–285; Map 49

Pardosa atra Banks, 1894:52. Name preoccupied in the combination *Pardosa waglerii atra* (Giebel, 1869) (Roewer 1954:175); Chamberlin 1908:188, figs. 3, 8 (pl. 8), 8 (pl. 13).

Pardosa wyuta Gertsch, 1934*a*:17. New name for *Pardosa atra* Banks, preoccupied.

Male. Total length 6.27 ± 0.60 mm; carapace 3.14 ± 0.22 mm long, 2.38 ± 0.16 mm wide (18 specimens measured). Carapace dark reddish brown; median band indistinct, pale, widened at dorsal groove and posterior to posterior row of eyes; submarginal bands (when present) pale, represented by series of 3 or 4 spots. Sternum blackish. Chelicerae dark reddish brown, with irregular black lines and many long erect setae. Legs dark reddish brown; femora and tibiae with 3 or 4 indistinct blackish rings; femora conspicuously



Map 49. Collection localities of *Pardosa wyuta*.

hairy. Abdomen hairy, dark brownish or blackish; heart mark large, indistinct; venter dull reddish or yellowish. Palpus dark reddish brown, hairy, marked with black; palea large, prominent, with oblique sclerite joining conductor; terminal apophysis broad, rather flat, somewhat curved at tip, and situated near tips of embolus and conductor; embolus long, slender, oblique, nearly straight; conductor long, with shallow fold at tip (Fig. 285); median apophysis lying in cavity on tegulum, with 2 processes; distal process short, pointed, rugose; basal process short, pointed (Fig. 284).

Female. Total length 7.13 ± 0.79 mm; carapace 3.21 ± 0.19 mm long, 2.49 ± 0.17 mm wide (20 specimens measured). Coloration essentially as in male. Epigynum hooded; hood cavities paired, shallow (Fig. 282); anterior part of median septum forming paired low parallel ridges with shallow channel between them; posterior part of median septum broader and flatter; copulatory openings situated at sides of posterior part of median septum. Copulatory tubes short, slender, first extending laterally, then curving anteriorly and mesally; spermathecae long, club-shaped, each with several prominent nodules (Fig. 283).

Comments. Individuals of *P. wyuta* are distinguished from those of other members of the *P. modica* group by the following characteristics: submarginal bands of carapace, when present, broken into spots; embolus long, slender, oblique, and nearly straight; terminal apophysis broad and flattened; conductor with shallow fold at tip; median apophysis small, with short distal and basal processes; anterior part of median septum having paired ridges separated by channel; posterior part broader, flatter; and spermathecae club-shaped and having several large nodules.

Range. British Columbia, south to California and Colorado.

Biology. Adult males have been collected in April and May and adult females from early April to July. Egg sacs were observed from late April to July. Most individuals were collected among stones and herbs along creeks and lakeshores. Others were found on sunny hillsides covered sparsely with conifers, on suburban lawns, and on sand dunes.

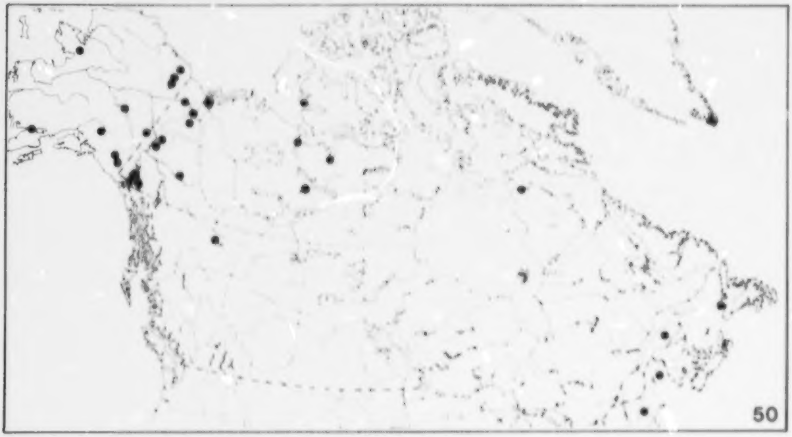
Pardosa albomaculata Emerton

Figs. 286–291; Map 50

Pardosa albomaculata Emerton, 1885:495, figs. 3, *3a*, *3b* (pl. 48); Kronestedt 1975:218, figs. *2a*, *3a*, 4A, *4a*, 5, *7a*.

Lycosa disjuncta Jackson, 1933:146, figs. 2, 3.

Pardosa tristoides Chamberlin and Ivie, 1947:22, fig. 88.



Map 50. Collection localities of *Pardosa albomaculata*.

Male. Total length 9.42 ± 0.85 mm; carapace 4.80 ± 0.36 mm long, 3.63 ± 0.24 mm wide (20 specimens measured). Carapace in life sooty black, with white median band and broken submarginal bands; carapace in ethanol dusky brown with broken brownish median band and broken yellowish submarginal bands. Chelicerae dusky to reddish brown, with faint darker streaks. Sternum grayish brown. Legs dusky brown, with indistinct lighter rings. Abdomen in life sooty black; abdomen in ethanol dark grayish; lateral areas of abdomen with paired small white spots; heart mark brownish in ethanol; venter grayish brown. Terminal apophysis large, somewhat curved, directed distally (Fig. 291); embolus moderately long, stout, broadly grooved on ventral surface (Figs. 286, 291); conductor broad, transverse, with divided tip, with blunt process and curved tooth-like piece (Fig. 291); median apophysis moderately large, with large rounded distal process and finger-shaped basal process (Fig. 290).

Female. Total length 9.34 ± 0.85 mm; carapace 4.28 ± 0.27 mm long, 3.39 ± 0.35 mm wide (17 specimens measured). Coloration essentially as in male (Fig. 289), but venter of abdomen with dense white pubescence. Epigynum with atrium distinctly longer than wide; median septum rather slender, somewhat widened at posterior end; anterior margins of cavity sclerites oblique, extending anterolaterally (Fig. 287). Spermathecae long, slender, club-shaped (Fig. 288).

Comments. Specimens of *P. albomaculata* are distinguished by the following characteristics: carapace with broken submarginal bands; terminal apophysis large and distally directed; embolus grooved; conductor apically divided; median apophysis with large rounded distal process and finger-shaped basal process; atrium distinctly longer than wide; median septum slender; and anterior margins of cavity sclerites extending anterolaterally.

Range. Alaska to Newfoundland, south to northern British Columbia and New Hampshire; southern Greenland.

Biology. Adults of *P. albomaculata* have been collected from June to September. Collections are from stony beaches in the north and from stone piles, sometimes at the foot of glaciers, in mountainous terrain farther south. Hillyard (1979) found specimens among dwarf willows and birch growing amid mosses, lichens, small shrubs, and grasses at low elevations (145 and 560 m) in Greenland. A single observation of male courtship indicates that the bouncing and drumming seen in *P. groenlandica* and *P. dromaea* are absent; instead, the male approaches the female rapidly, extends his first pair of legs forward stiffly, and vibrates these legs rapidly on her legs and body.

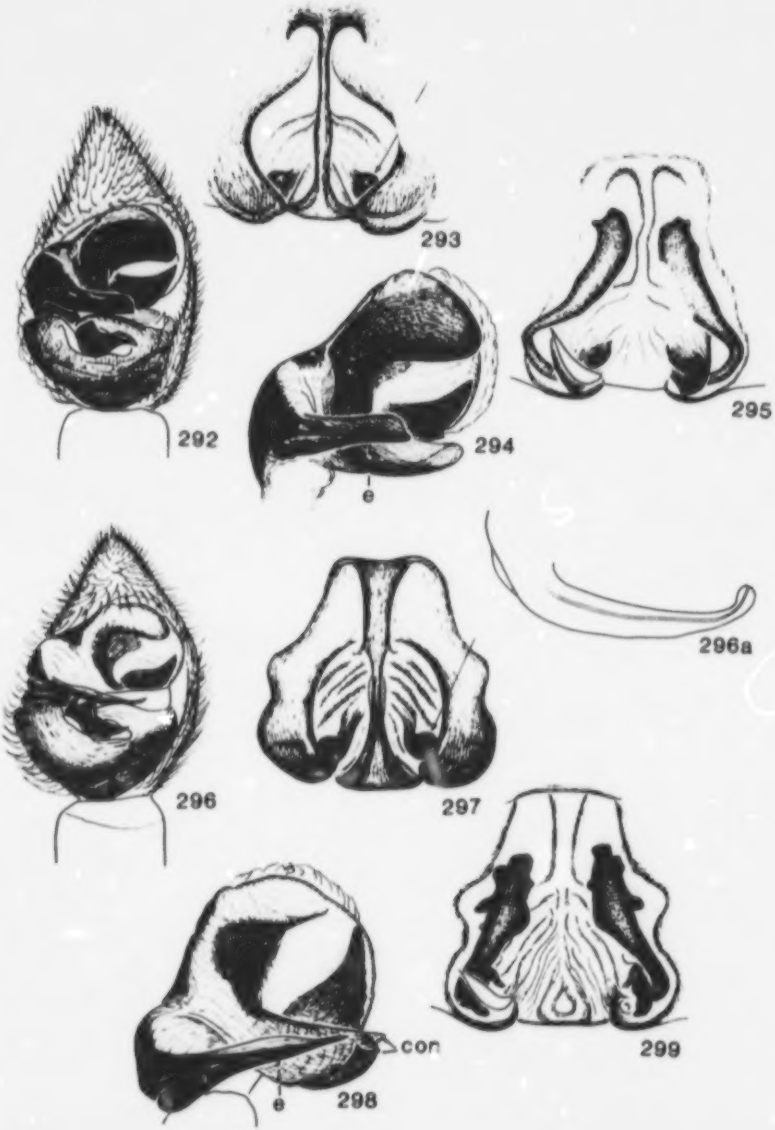
Pardosa bucklei Kronestedt

Figs. 292–295; Map 51

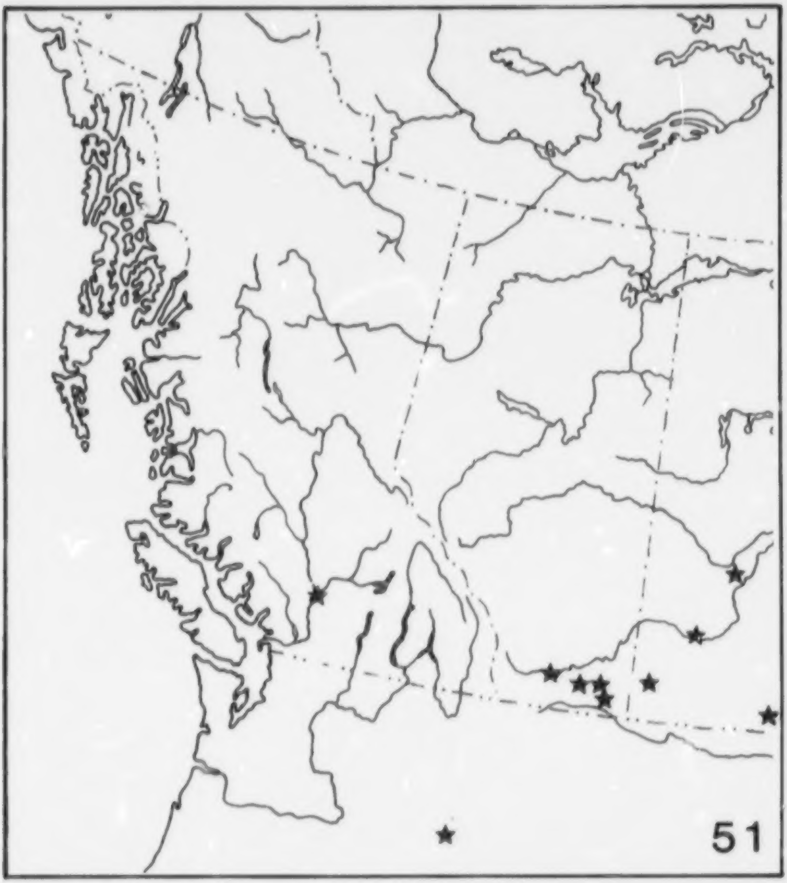
Pardosa bucklei Kronestedt, 1975:224, figs. 2*c*, 3*d*, 4D, 4*d*, 6*c*–6*e*, 7*c*.

Male. Total length 6.86 ± 0.70 mm; carapace 3.47 ± 0.34 mm long, 2.55 ± 0.26 mm wide (20 specimens measured). Carapace dusky brown; median band abbreviated, paler; submarginal bands broken, yellowish. Chelicerae brown, with grayish streaks. Sternum grayish brown, with slender pale median band anteriorly. Legs yellowish, with grayish markings. Abdomen grayish, with series of lighter chevrons or triangular spots; lateral areas of abdomen with series of paired white spots; heart mark light brown; venter light grayish. Terminal apophysis long, stout, somewhat curved, directed distally; embolus broad, rather short, truncate at tip; conductor long, broad, curved to blunt tip (Fig. 294); median apophysis with 2 processes; distal process small, angular; basal process larger, beak-like (Fig. 292).

Female. Total length 7.86 ± 1.03 mm; carapace 3.56 ± 0.27 mm long, 2.67 ± 0.28 mm wide (20 specimens measured). Coloration essentially as in male, but legs with pale rings distinct, yellowish. Epigynum with atrium distinctly longer than wide; median septum rather slender, widened somewhat at posterior end; cavity sclerites with anterior margins essentially transverse (Fig. 293). Spermathecae long, slender, club-shaped, extending far toward anterior end of epigynum, usually with small nodules (Fig. 295).



Figs. 292–299. Genitalia of *Pardosa* spp. 292–295, *P. bucklei*. 292, 294, palpus of male: 292, ventral view; 294, apical division, ventral view; 293, epigynum, ventral view; 295, spermathecae, dorsal view. 296–299, *P. lowriei*. 296, 296*a*, 298, palpus of male: 296, ventral view; 296*a*, embolus, distal view; 298, apical division, ventral view; 297, epigynum, ventral view; 299, spermathecae, dorsal view. *con*, conductor; *e*, embolus.



Map 51. Collection localities of *Pardosa bucklei*.

Comments. Specimens of *P. bucklei* are distinguished by the following characteristics: carapace with broken submarginal bands; body small; abdomen with chevrons or series of triangular spots; terminal apophysis distally directed; embolus short, broad, and truncate; conductor bluntly tipped; median apophysis with small, angular distal process and larger, beak-like basal process; atrium longer than wide; median septum slender; anterior margins of cavity sclerites transverse; and spermathecae extending far toward anterior extremity of epigynum.

Range. Southern British Columbia, Alberta, and Saskatchewan, south to California and New Mexico.

Biology. Adults have been collected in June and July, mainly at the margins of prairie sloughs.

Pardosa lowriei Kronestedt

Figs. 296–299; Map 52

Pardosa lowriei Kronestedt, 1975:221, figs. 2*b*, 3*b*, 4B, 4*b*, 6*a*, 6*b*, 7*b*.

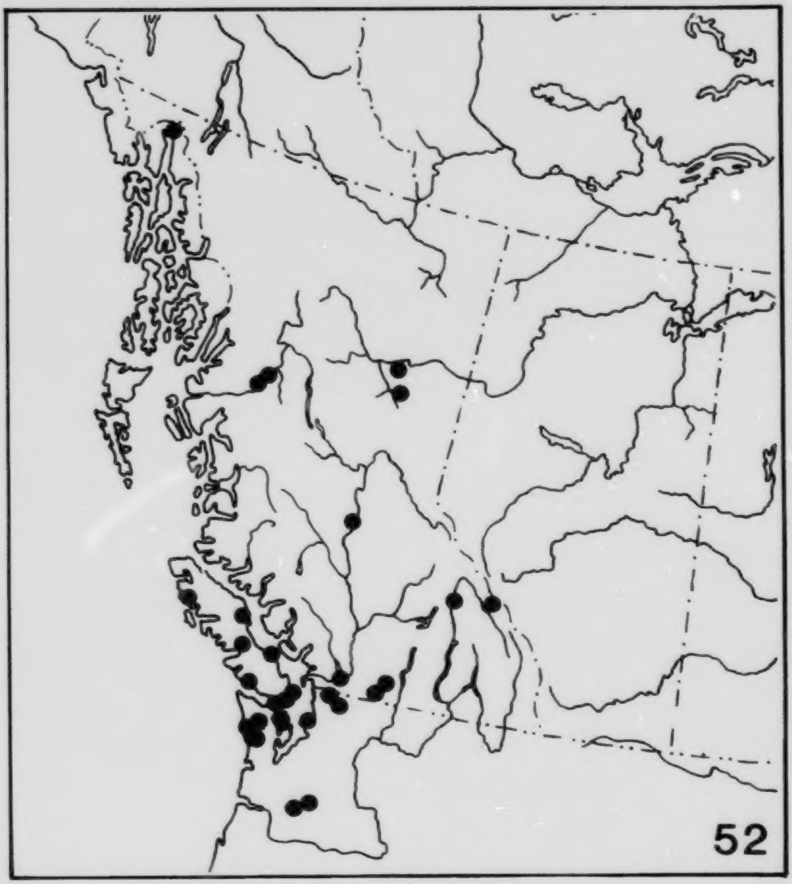
Male. Total length 8.64 ± 0.75 mm; carapace 4.36 ± 0.23 mm long, 3.40 ± 0.22 mm wide (20 specimens measured). Carapace dusky brown; median band abbreviated, paler than carapace; submarginal bands yellowish, broken. Chelicerae dusky brown, with faint dark streaks. Sternum grayish brown, sometimes with faint paler median band. Legs dusky brown, with pale rings. Abdomen dark grayish; lateral areas of abdomen with paired small white spots; heart mark brownish; venter brownish. Terminal apophysis large, somewhat curved, directed distally (Fig. 298); embolus broad at base, much tapered, broadly grooved near base (Fig. 296*a*); conductor broad, distally tapered to divided tip (Fig. 298); median apophysis small, with 2 processes; distal process angular; basal process tapered, pointed (Fig. 296).

Female. Total length 8.94 ± 0.98 mm; carapace 4.39 ± 0.38 mm long, 3.52 ± 0.32 mm wide (20 specimens measured). Coloration essentially as in male, but pale leg rings usually more distinct. Epigynum with atrium distinctly longer than wide; median septum rather slender, widening somewhat at anterior and posterior extremities; cavity sclerites with anterior margins transverse (Fig. 297). Spermathecae long, slender, club-shaped, often with large nodules (Fig. 299).

Comments. Specimens of *P. lowriei* are distinguished by the following characteristics: carapace with broken submarginal bands; terminal apophysis large and distally directed; embolus grooved; conductor distally divided; median apophysis with angular distal process and tapered pointed basal process; atrium longer than wide; median septum slender and widening anteriorly and posteriorly; and cavity sclerites transverse.

Range. Southern Alaska to Washington.

Biology. Adults have been collected in June and July, mainly from stony river banks or lakeshores, but also from large boulders at the foot of glaciers.



Map 52. Collection localities of *Pardosa lowriei*.

Pardosa dromaea (Thorell)

Figs. 305–307; Map 53

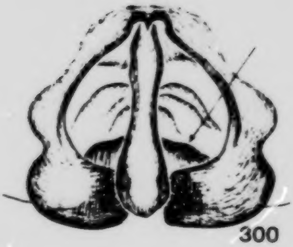
Lycosa indagatrix Thorell, 1877:512. Name preoccupied in genus *Lycosa*.

Lycosa dromaea Thorell, 1878:395. New name for *Lycosa indagatrix* Thorell, preoccupied.

Pardosa groenlandica: Emerton 1894:423, fig. 1*b* (pl. 4).

Pardosa dromaea: Simon 1898:359.

Pardosa nebraska Chamberlin and Ivie, 1942:30, figs. 69, 70 (pl. 7), new synonym.



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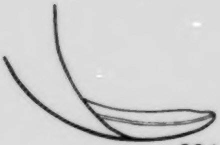

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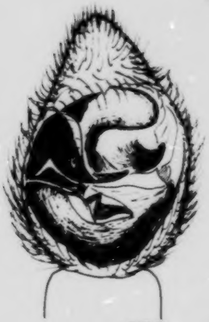

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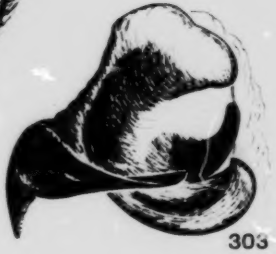

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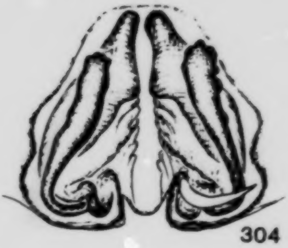

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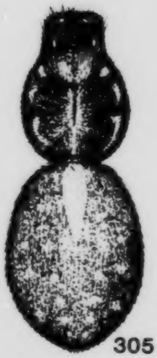

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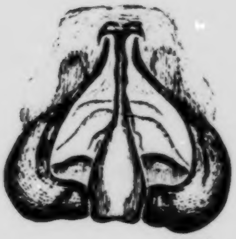

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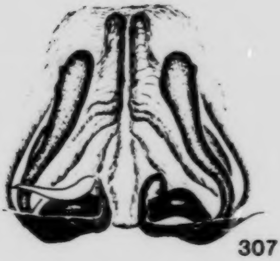

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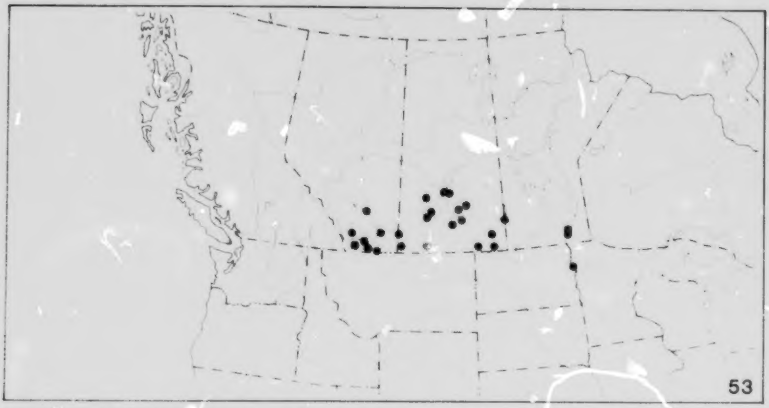
Figs. 300–307. Structures of *Pardosa* spp. 300–304, *P. groenlandica.* 300, epigynum, ventral view; 301–303, palpus of male: 301, embolus, distal view; 302, palpus, ventral view; 303, apical division, ventral view; 304, spermathecae, dorsal view. 305–307, *P. dromaea.* 305, body of female, dorsal view; 306, epigynum, ventral view; 307, spermathecae, dorsal view.

Male. Total length 7.80 ± 0.43 mm; carapace 4.00 ± 0.25 mm long, 2.98 ± 0.21 mm wide (20 specimens measured). Carapace rather low and broad, hairy, blackish or dark brownish; median band represented by pale spot at dorsal groove; submarginal bands pale, represented by series of 3 or 4 spots. Sternum dark reddish or blackish, covered with white recumbent setae and longer erect setae. Chelicerae blackish, hairy. Legs dark reddish brown to blackish, hairy; femora sometimes with dark rings. Abdomen blackish, hairy, mottled with dull red; heart mark reddish; venter reddish brown or yellowish brown. Palpus hairy, dark; palea with broad curved sclerite that joins conductor; terminal apophysis long, stout, somewhat curved; embolus rather short, broad; basal part of embolus oblique; distal part of embolus curved or transverse; conductor long, broad, flattened; tip of conductor convex, curved dorsal to terminal apophysis; median apophysis small, seated in cavity of tegulum, with 2 processes; basal process minute, rounded; distal process longer, more slender, beak-like (Figs. 302, 303).

Female. Total length 8.60 ± 0.98 mm; carapace 3.86 ± 0.43 mm long, 2.95 ± 0.35 mm wide (20 specimens measured). Coloration as in male (Fig. 305). Epigynum hooded; hood cavities paired, shallow (Fig. 306); median septum prominent, rather slender, with 2–5 pairs of strengthening ridges; copulatory openings at posterior end of atrium; cavity sclerites with anterior margin convex or straight, usually transverse. Copulatory tubes slender; spermathecae long, club-shaped, each with several nodules (Fig. 307).

Comments. Individuals of *P. dromaea* are distinguished from those of the other Canadian members of the *P. modica* group (except *P. groenlandica*) by the male's basally tapered embolus and broad, flat, strongly curved conductor and by the female's narrow, usually transverse, cavity sclerites of the epigynum. The genitalia of mature males and females of *P. dromaea* are indistinguishable from those of *P. groenlandica*, but individuals of *P. dromaea* are significantly smaller in carapace length, carapace width, and total length, based on samples of 20 individuals of each sex. Habitats also differ; individuals of *P. dromaea* are found along road verges, sandy creek banks, and grain fields in the central plains, whereas those of *P. groenlandica* live among stones (from pebble to cobblestone size) on the shorelines of lakes and rivers and on the Atlantic coast of North America. In addition to these differences we have observed a consistent difference in male courtship. A male of *P. dromaea*, once aroused, makes a sudden bouncing dash toward the female, drumming the substrate with his front legs. Males of *P. groenlandica*, on the other hand, make a rapid series of bounces, holding the front legs forward and vibrating them rapidly, after which the male moves toward the female at a normal walk or run.



Map 53. Collection localities of *Pardosa dromaea*.

Spiders similar to both *P. dromaea* and *P. groenlandica* are found in interior British Columbia and the Rocky Mountains of southern Alberta. They are as large as *P. groenlandica* but occupy the same habitats (dry grasslands, sage brush, muddy river banks) as *P. dromaea*; the male genitalia appear to differ slightly from those of *P. dromaea*. Determining the courtship behavior of these western spiders may help to clarify their status.

Range. Eastern Alberta to Manitoba, south in the Central Plains to eastern Colorado and Nebraska.

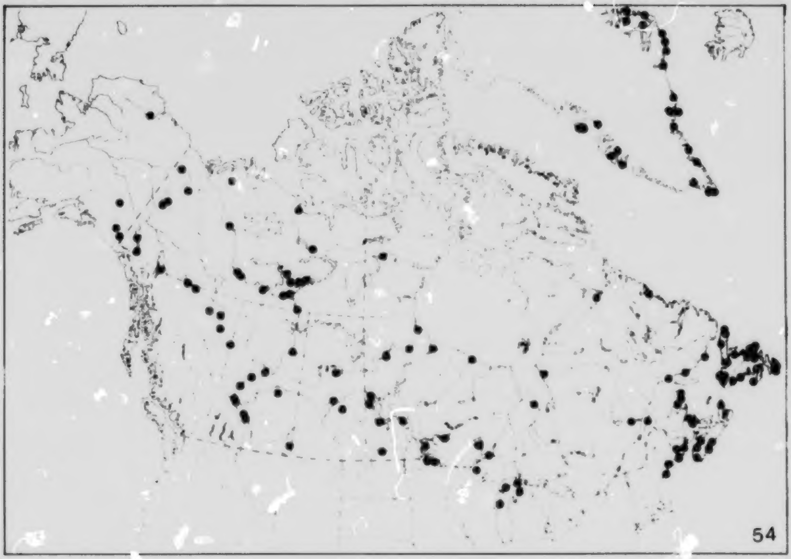
Biology. Mature males have been taken from early May to August and mature females from mid May to mid September. Egg sacs were observed from mid May to mid August. Habitat and male courtship are described briefly in the section entitled "Comments."

Pardosa groenlandica (Thorell)

Figs. 300–304; Map 54

Lycosa groenlandica Thorell, 1872*a*:157.
Pardosa groenlandica: Marx 1892:197; Kronestedt 1975:218, figs. 3c, 4C, 4c.

Male. Total length 8.70 ± 0.60 mm; carapace 4.25 ± 0.25 mm long, 3.31 ± 0.22 mm wide (20 specimens measured). Carapace rather low and broad, rather hairy, blackish or dark reddish brown; pale median band represented by spot at dorsal groove; pale submarginal bands absent or represented by series of 3 or 4 spots. Sternum dark



Map 54. Collection localities of *Pardosa groenlandica*.

reddish to blackish, covered with short white recumbent setae and with many long erect dark setae. Chelicerae dark reddish brown, hairy. Legs dark reddish brown to blackish; femora and sometimes tibiae and basitarsi with 2 or 3 dark rings; all segments rather hairy; tarsi often with many long erect setae distributed along prolateral and retrolateral surfaces. Abdomen hairy, blackish, mottled with dull red; heart mark large, reddish; venter reddish brown or yellowish brown. Palpus dark reddish brown, marked with black; tibia and cymbium hairy; palea prominent, with sclerite; sclerite broad, curved, joining conductor; terminal apophysis long, stout, somewhat curved (Fig. 303); embolus long, broad, black, oblique basally, transverse distally (Fig. 301); conductor long, broad, flattened, with tip convex (Fig. 303); median apophysis small, seated in cavity of tegulum, with 2 processes; distal process minute, rounded; basal process longer, slender, beak-like (Fig. 302).

Female. Total length 9.42 ± 1.19 mm; carapace 4.30 ± 0.41 mm long, 3.41 ± 0.36 mm wide (20 specimens measured). Coloration as in male. Leg tarsi as in male. Epigynum hooded; hood cavities paired, shallow (Fig. 300); median septum prominent, rather slender, tapered anteriorly, with 2–5 pairs of strengthening ridges; copulatory openings at posterior end of atrium (dorsal to cavity sclerites); cavity sclerites with anterior margin convex or straight, oblique or transverse. Copulatory tubes slender, extending posterolaterally, then arching anteromesally; spermathecae long, club-shaped, with several large nodules (Fig. 304).

Comments. Individuals of *P. groenlandica* are distinguished from other species of the *P. modica* group (except *P. dromaea*) by the broad, flat, strongly curved conductor of the male palpus and by the narrow cavity sclerites of the female epigynum. Both sexes of *P. groenlandica* are statistically larger than those of *P. dromaea*, and the male courtship and the ranges and typical habitats also differ; these have been described under the latter species.

Range. Alaska to Newfoundland, south to Alberta, the Great Lakes, and the coast of Maine; Greenland, Siberia.

Biology. Adult males have been taken from early May to August and adult females from mid May to mid September. Egg sacs were observed from late May to mid September. The main habitats are cobblestone beaches (both tidal and freshwater) and gravel bars in creeks and rivers. Holm (1967) lists the habitats in Greenland as "the herb fields on mountain slopes as well as *Salix polaris* and *Sibbaldia procumbens* communities of snow beds. [The species] was also found under stones in heaths and at the seashore."

The *Pardosa lapidicina* group

Description. Total length 5.0–9.0 mm. Carapace reddish brown or blackish; males usually without pale bands; females usually with indistinct median and submarginal bands; submarginal bands, when developed, broken into series of spots. Chelicerae and sternum pale to dark. Legs dark. Abdomen brownish. Palea with small tooth-like process at tip; terminal apophysis long, slender, with tip lying between 2 processes of conductor; embolus short or long, broad or slender, approximately transverse (Figs. 311, 316); conductor transverse, long, straight or curved, with 3 small processes at tip; median apophysis small, rounded distally, with small hooked distal process, without obvious basal process (Figs. 310, 315). Epigynum with broad shallow hood; atrium broad, shallow; longitudinal piece of median septum slender, evanescent; transverse piece of median septum variously shaped (Figs. 309, 313); copulatory openings at anterior margin of transverse piece of median septum; copulatory tubes angled; spermathecae rather large, rounded in outline (Figs. 308, 312).

Comments. Members of the *P. lapidicina* group are distinguished from those of other groups in the genus *Pardosa* by the following characteristics: palea with small tooth at tip; embolus broad and transverse; terminal apophysis slender, lying between two processes at tip of conductor; median apophysis small, distally rounded, with small hooked distal process but no basal process; epigynal hood with single shallow cavity; and median septum with slender evanescent longitudinal piece and broad posterior transverse piece. Barnes (1959) revised the group, which is represented in Canada by two species.

Pardosa steva Lowrie & Gertsch

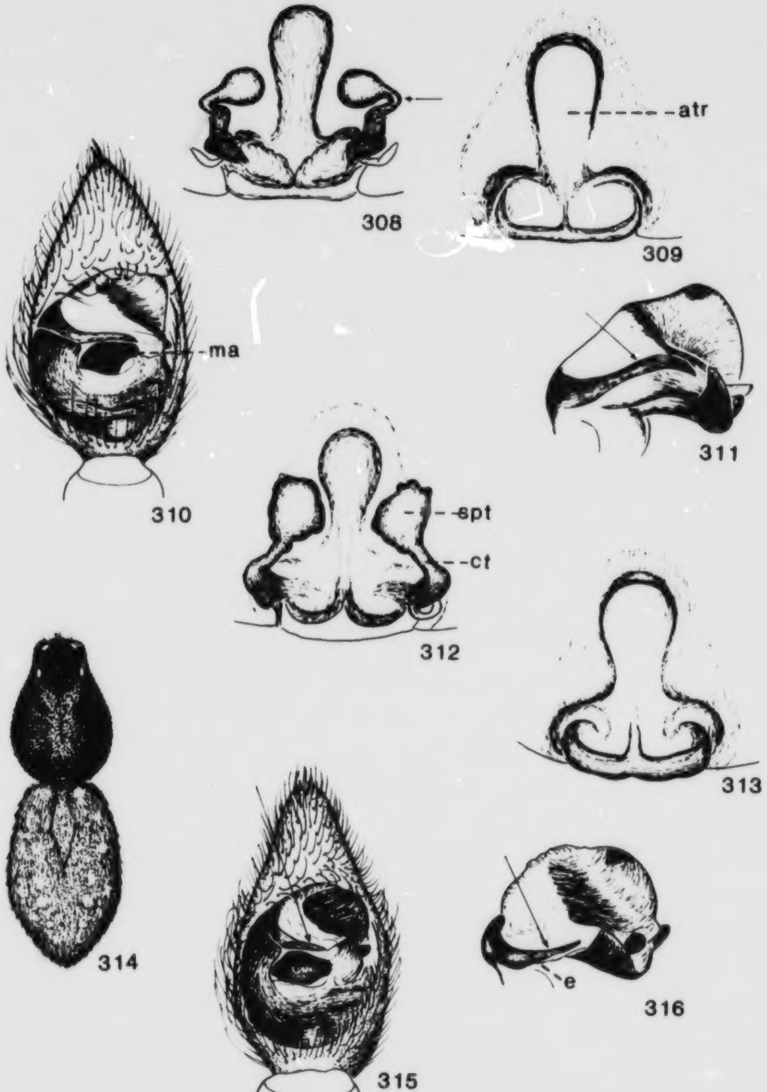
Figs. 308–311; Map 55

Pardosa steva Lowrie and Gertsch, 1955:8, figs. 4, 5, 9; Barnes 1959:12, figs. 4, 26–28, 32.

Male. Total length 6.03 ± 0.41 mm; carapace 3.00 ± 0.15 mm long, 2.34 ± 0.14 mm wide (20 specimens measured). Carapace black; median band pale, broad, faintly indicated in dorsal groove area; pale submarginal bands sometimes present, indicated by series of spots. Sternum black. Chelicerae black, with pale markings. Legs black basally, gradually becoming reddish brown distally; femora rarely with 2 dark rings. Abdomen sooty black; venter blackish to dull yellow, rather hairy. Palpus with femur, patella, and tibia black with yellowish markings; cymbium dark basally, yellowish distally; palea pale, concave, with well-sclerotized prominence near midline; embolus long, broad, somewhat sinuous, with tip lying in groove at tip of tegulum; conductor long, somewhat curved, with 3 dark toothlike processes at tip (Fig. 311); median apophysis small, rounded distally (Fig. 310).

Female. Total length 7.40 ± 0.86 mm; carapace 3.28 ± 0.17 mm long, 2.60 ± 0.16 mm wide (20 specimens measured). Coloring as in male; median and submarginal bands pale, more distinct; leg femora, tibiae, and basitarsi sometimes with dark rings; abdomen sometimes with pattern of yellow spots; heart mark brownish. Epigynum (Fig. 309) with median septum slender and evanescent anteriorly; transverse piece broad, curved. Copulatory tubes short, broad, extending anterolaterally, then narrowing and extending anteromesally; spermathecae large, round in outline, well separated, smooth (Fig. 308).

Comments. Individuals of *P. steva* are distinguished from the other members of the *P. lapidicina* group by the following characteristics: body dark; femora dark; extremities of the legs paler; palea concave, with a sclerotized prominence near the midline; embolus long, broad, somewhat sinuous; and spermathecae smooth.



Figs. 308–316. Structures of *Pardosa* spp. 308–311, *P. steva*. 308, spermathecae, dorsal view; 309, epigynum, ventral view; 310, 311, palpus of male: 310, ventral view; 311, apical division, ventral view. 312–316, *P. lapidicina*. 312, spermathecae, dorsal view; 313, epigynum, ventral view; 314, body of female, dorsal view; 315, 316, palpus of male: 315, ventral view; 316, apical division, ventral view. *atr*, atrium; *ct*, copulatory tube; *e*, embolus; *ma*, median apophysis; *spt*, spermatheca.

Range. Oregon to southern Alberta and Montana, south to northern Mexico.

Biology. Adult males and females have been collected from June to August, although they probably mature earlier in the summer. Egg sacs have also been recorded from June to August. The main habitats are pebbly river banks and creek beds. Individuals have been found at elevations of up to 3170 m.

Pardosa lapidicina Emerton

Figs. 312–316; Map 55

Pardosa lapidicina Emerton, 1885:494, figs. 5, 5*a*–5*c* (pl. 48); Chamberlin 1908:195 (part), figs. 7, 8 (pl. 14); Kaston 1948:337, figs. 1129 (pl. 58), 1143–1145 (pl. 59), 2068 (pl. 134); Barnes 1959:4, figs. 1, 6–10.

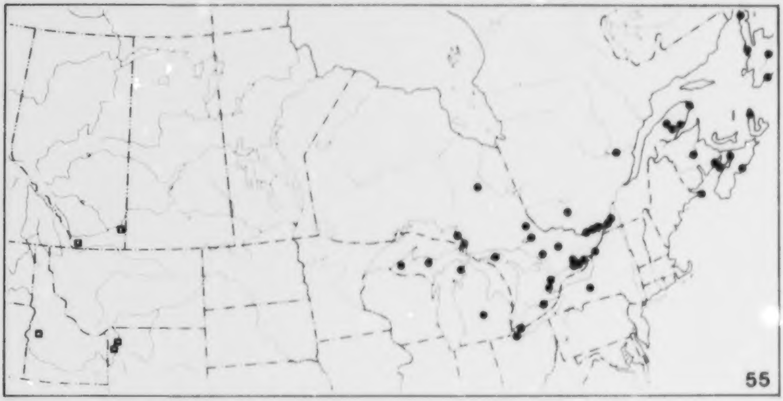
Pardosa obsoleta Banks, 1892:71, fig. 45 (pl. 3).

Pardosa venusta Banks, 1892:69, fig. 42 (pl. 1).

Male. Total length 5.63 ± 0.62 mm; carapace 2.86 ± 0.23 mm long, 2.36 ± 0.20 mm wide (20 specimens measured). Carapace dark reddish brown; eye area darker; median and submarginal bands pale, indistinct; submarginal bands (if present) broken into series of spots. Sternum blackish. Chelicerae black to reddish brown, paler distally, hairy. Legs dark reddish brown to blackish; femora often with pale ring at middle, rarely with 3 or 4 dark rings as well. Abdomen dark gray or blackish, sometimes with pairs of indistinct pale spots; heart mark large, pale, sometimes absent; venter blackish to yellowish brown. Palpus reddish brown; tibia hairy; palea pale prolaterally, darker and concave retrolaterally, with small tooth-like process at tip; embolus short, broad, tapered, somewhat curved (Fig. 316); median apophysis small, rounded (Fig. 315).

Female. Total length 7.54 ± 0.84 mm; carapace 3.39 ± 0.30 mm long, 2.88 ± 0.23 mm wide (20 specimens measured). Coloration essentially as in male; carapace usually dark (Fig. 314), sometimes with more distinct pale median and submarginal bands; leg femora paler than in male and with dark bands; abdomen irregularly spotted with yellow. Epigynal median septum with slender curved transverse piece posteriorly (Fig. 313). Copulatory tubes short, broad, extending anterolaterally, then angled anteromesally; spermathecae large, rounded, with several small nodules (Fig. 312).

Comments. Individuals of *P. lapidicina* are distinguished from other members of the *P. lapidicina* group by the following characteristics: carapace, legs, and palpi reddish brown; leg femur



Map 55. Collection localities of *Pardosa steva* (□) and *P. lapidicina* (●).

with pale ring at middle; palea pale prolaterally and dark and concave retrolaterally; embolus short, stout, curved; and spermathecae with small nodules. The range of *P. lapidicina* is largely separate from that of *P. steva*.

Range. Minnesota and Ontario to Nova Scotia, south to Arkansas and northern Georgia.

Biology. Adult males and females have been collected from March (in the southern parts of the range) to mid November. Egg sacs have been recorded from April to July, and females with young on their backs were found in June and July. The habitats include pebbly beaches along lakes and rivers, limestone outcrops, quarries, and talus slopes. Kaston (1936) described the mating of this spider. The main features of courtship are as follows: the male drums his palpi rapidly on the substrate. He then shakes his body rapidly forward and backward while standing on his tarsal tips and extending his front legs forward. Finally, he rapidly vibrates his front legs on the body and legs of the female. Eason (1969) studied the life history of *P. lapidicina*.

The *Pardosa moesta* group

Description. Total length 4.5–6.2 mm. Carapace of male dark and shiny, lacking pale bands; carapace of female dark with faint pale median and submarginal bands. Sternum dark. Chelicerae dark; lateral tubercles numerous, minute (Fig. 318). Legs dark orange. Abdomen dull reddish, mottled with black and brown. Palpal tibia conspicuously swollen; palea with prominent hooked distal process (Fig. 321); terminal apophysis massive; embolus long, broad at base, tapered; conductor broad, pointed (Fig. 317); median apophysis small, with 2 processes; distal process short, blunt; basal process large, basally directed (Fig. 321). Epigynum hooded; hood cavities paired, well separated; atrium expanded at both ends; median septum long; anterior piece of median septum slender, sinuous; posterior piece of median septum broad, rectangular (Fig. 320); copulatory tubes extending first anteriorly, then laterally, and finally anteromesally; spermathecae large, ovoid, with nodules (Fig. 322).

Comments. The single member of the *P. moesta* group is distinguished from those of other groups in the genus *Pardosa* by the following characteristics: body small; carapace of male black and shiny; chelicerae with numerous minute tubercles laterally; palea with prominent hooked process at tip; terminal apophysis massive; median apophysis with rounded distal process and large basally directed basal process; epigynal cavities large and well separated; and spermathecae large and ovoid. The group is represented only by *P. moesta* Banks (Dondale and Redner 1987).

Pardosa moesta Banks

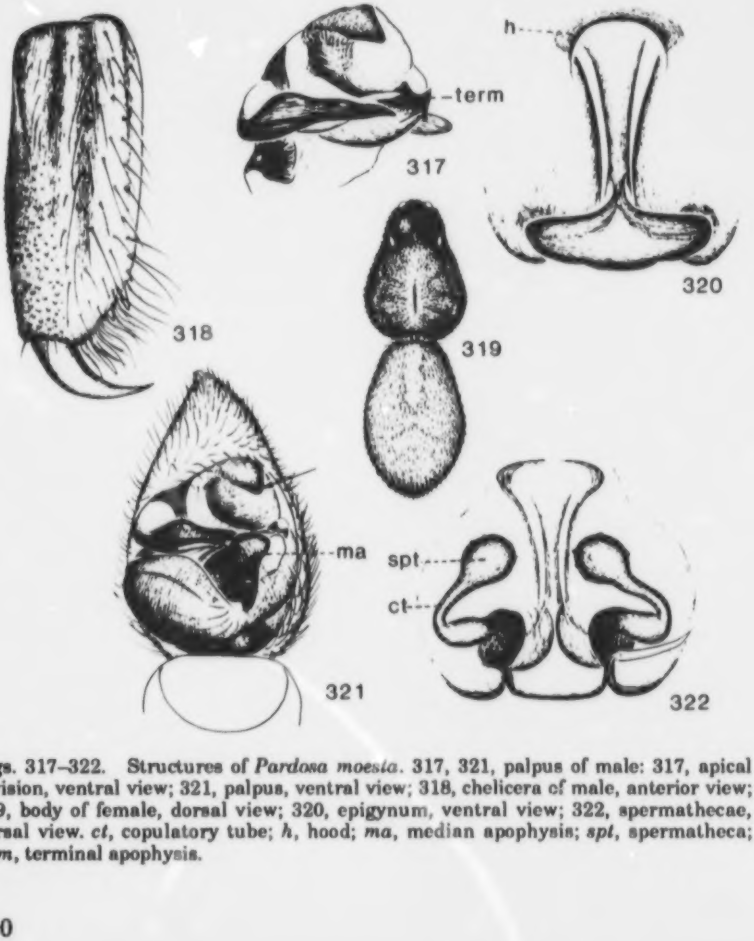
Figs. 317–322; Map 56

Pardosa moesta Banks, 1892:70, fig. 44 (pl. 3); Chamberlin 1908:183, fig. 9 (pl. 14); Kaston 1948:334, figs. 1122 (pl. 57), 1123 (pl. 58), 1137 (pl. 59); Dondale and Redner 1987:6, figs. 5, 8, 11, 22, 25, 26.

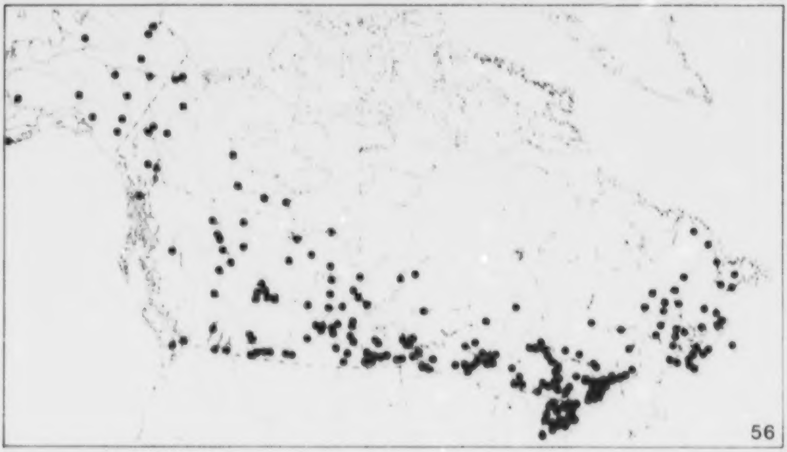
Pardosa diffusa Emerton, 1909:208, figs. 6, 6*a*, 6*b* (pl. 6).

Male. Total length 4.95 ± 0.40 mm; carapace 2.51 ± 0.24 mm long, 1.82 ± 0.23 mm wide (20 specimens measured). Carapace dark reddish brown, shiny, with several black lines radiating from dorsal groove area; eye area black; median and submarginal bands absent; lateral margins with fringe of white setae. Chelicerae dark orange; lateral tubercles numerous, minute, black-tipped (Fig. 318). Sternum dark reddish brown. Legs dark orange, paler distally; scopulae sparse; femur I usually and femur II sometimes with dark longitudinal streaks; femora III and IV sometimes with faint dark rings; tips of femora, patellae, and tibiae rarely with dark marks. Abdomen dull reddish, mottled with black and brown, with several pairs of small white spots indicated by setae; heart mark reddish; venter dull reddish. Palpus dull reddish brown; tibia conspicuously thickened (approximately two-thirds as wide as long); palea with broad prominent hooked process at tip; terminal apophysis massive, with 2 teeth; terminal apophysis supporting tip of conductor on its ventral surface; embolus long, thick at base, unevenly tapered to point; conductor broad, pointed, transverse (Fig. 317); median apophysis small, with 2 processes; distal process short, blunt; basal process large, straight (Fig. 321).

Female. Total length 5.64 ± 0.57 mm; carapace 2.55 ± 0.18 mm long, 1.91 ± 0.14 mm wide (20 specimens measured). Coloration



Figs. 317–322. Structures of *Pardosa moesta*. 317, 321, palpus of male: 317, apical division, ventral view; 321, palpus, ventral view; 318, chelicera of male, anterior view; 319, body of female, dorsal view; 320, epigynum, ventral view; 322, spermathecae, dorsal view. *ct*, copulatory tube; *h*, hood; *ma*, median apophysis; *spt*, spermatheca; *term*, terminal apophysis.



Map 56. Collection localities of *Pardosa moesta*.

essentially as in male, but carapace with faint pale median and submarginal bands (Fig. 319). Chelicerae with lateral tubercles; tubercles minute, each with fine, short seta. Legs often lacking dark markings. Epigynum hooded; hood cavities paired, shallow, well separated (Fig. 320); atrium expanded laterally at both ends, pale and depressed at anterior end; median septum long; anterior piece of median septum slender, somewhat sinuous; transverse piece of median septum broad, somewhat rectangular; copulatory openings along anterior margins of posterior piece of median septum. Copulatory tubes curved first for short distance anteriorly, then laterally, finally anteromesally; spermathecae large, ovoid, covered with minute nodules (Fig. 322).

Comments. Specimens of *P. moesta* are distinguished from those of other North American species of *Pardosa* by the following characteristics: carapace in males dark, shiny; palpal tibia thickened; chelicerae with numerous minute black-tipped tubercles on lateral surfaces; palea with prominent hooked process; terminal apophysis with 2 teeth; atrium expanded at both ends; epigynal hood cavities well separated; transverse piece of median septum somewhat rectangular; and spermathecae large, ovoid, and covered with nodules.

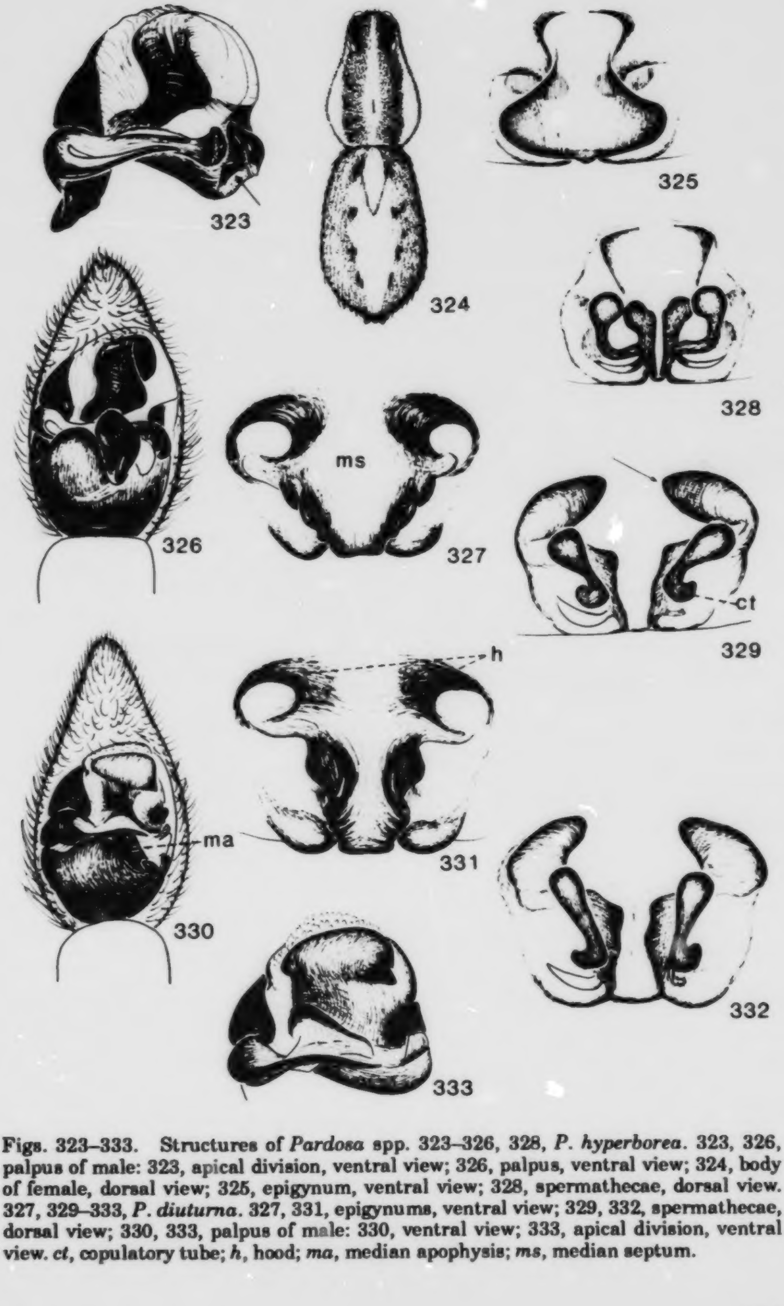
Range. Alaska to Newfoundland, south to Utah, Colorado, and Tennessee.

Biology. Males of *P. moesta* have been collected from May to August and females from May to October. Egg sacs have been collected from May to mid October. Large catches can often be made in meadows, hayfields, marshes, bogs, and even on urban lawns. Additional habitats are tidal beach drift and deciduous and coniferous forests. Elliott et al. (1982) investigated the allozymic variation of this spider in Michigan, and Hegdekar and Dondale (1969) experimented with the female sex pheromone.

The *Pardosa xerampelina* group

Description. Total length 5.2–9.6 mm. Carapace brown to black; median and submarginal bands indistinct or absent; submarginal bands pale, sometimes reduced to 3 or 4 spots. Sternum and chelicerae dark brown to black. Legs dark brownish to black basally, brownish orange distally; femora usually with black rings. Abdomen dark brownish, dark reddish, or black; venter paler and hairy. Palpus dark, hairy; palea with small ridge-like process near retrolateral margin and with sclerite; sclerite slender, extending obliquely across surface; terminal apophysis short, tooth-like, directed distally (Figs. 333, 334, 339); embolus long, slender, straight or curved; conductor long, broad and curved at tip; median apophysis small, usually as broad as long, with 2 processes; distal process short, broad, rounded; basal process small, hooked (Figs. 330, 336, 340). Epigynal hood cavities large, paired, well separated (Figs. 327, 338, 341); median septum fan-shaped or triangular, expanding greatly anteriorly. Copulatory tubes slender, curled at base; spermathecae small, bulbous, with small nodules (Figs. 329, 335, 342).

Comments. Members of the *P. xerampelina* group are distinguished from those of other groups in the genus *Pardosa* by the following characteristics: terminal apophysis short, tooth-like, directed distally; conductor long, with broad curved tip; median apophysis small, with short rounded distal process and small hooked basal process; epigynal hood cavities large, paired, well separated; median septum widening anteriorly, fan-shaped or triangular; and copulatory tubes small, curled at base. The group was revised for North America by Dondale and Redner (1986). It is represented in Canada and Alaska by three species.



Figs. 323–333. Structures of *Pardosa* spp. 323–326, 328, *P. hyperborea*. 323, 326, palpus of male: 323, apical division, ventral view; 326, palpus, ventral view; 324, body of female, dorsal view; 325, epigynum, ventral view; 328, spermathecae, dorsal view. 327, 329–333, *P. diuturna*. 327, 331, epigynums, ventral view; 329, 332, spermathecae, dorsal view; 330, 333, palpus of male: 330, ventral view; 333, apical division, ventral view. *ct*, copulatory tube; *h*, hood; *ma*, median apophysis; *ms*, median septum.

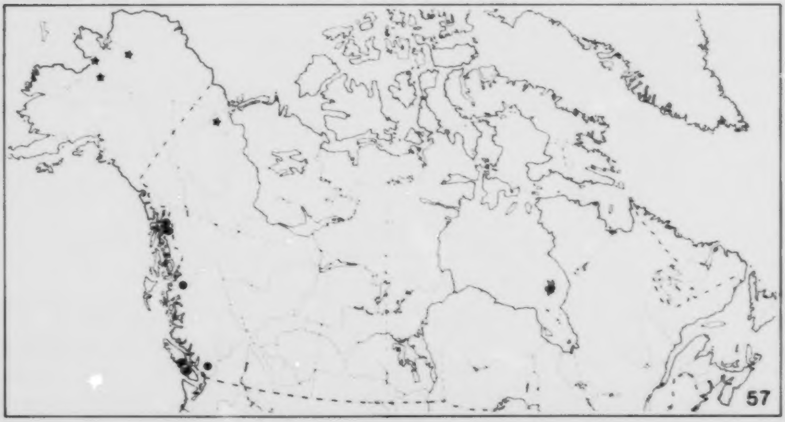
Pardosa diuturna Fox

Figs. 327, 329–333; Map 57

Pardosa diuturna Fox, 1937:114, fig. 3; Dondale and Redner 1986:819, figs. 7, 10, 29–32.

Male. Total length 7.39 ± 0.46 mm; carapace 3.58 ± 0.24 mm long, 3.03 ± 0.32 mm wide (14 specimens measured). Carapace dark brown to black, with several radiating black lines; median band indistinct, pale; submarginal bands absent. Chelicerae dark brownish, setaceous. Sternum dark brown. Legs dark brown to black basally, dull orange distally; femora and tibiae with darker rings and longitudinal streaks. Abdomen dull black; venter dull yellowish red to dull black, setaceous. Palpal tibia with many long dark setae; cymbium with brush of short amber setae dorsally on distal one-third; palea with ridge-like process near retrolateral margin; embolus long, stout at base, more slender and curved distally (Fig. 333); median apophysis small, revealing embolus (ventral view), with basal process; basal process large, nearly as wide as main part of median apophysis (Fig. 330).

Female. Total length 8.26 ± 0.71 mm; carapace 3.74 ± 0.48 mm long, 3.25 ± 0.60 mm wide (11 specimens measured). Coloration essentially as in male, but dark rings on legs more distinct and appearing also on basitarsi; body and legs with many white setae mixed with dark setae. Epigynum with hood cavities deep, directed mesally; median septum widening anteriorly, indented at sides (Figs. 327, 331). Copulatory tubes slender, directed anterolaterally, curled



Map 57. Collection localities of *Pardosa diuturna* (●) and *P. nordicolens* (★).

at base; spermathecae small, club-shaped, smooth or with few minute nodules (Figs. 329, 332).

Comments. Males of *P. diuturna* differ from those of the other species in the *P. xerampelina* group in having a relatively small median apophysis that reveals the embolus in ventral view and in having a relatively large basal process on the median apophysis. Females of *P. diuturna* are distinguished by the possession of deep, mesally directed hood cavities.

Range. Southern Alaska to Vancouver Island.

Biology. Males have been collected in June and July. Females, including ones with egg sacs, have been collected from June to August. Most specimens were collected on moraines or on soft snow at the foot of glaciers. Some were found on stony ground at elevations above 1600 m in the coastal mountains of Alaska and British Columbia.

Pardosa xerampelina (Keyserling)

Figs. 334–338; Map 58

Lycosa xerampelina Keyserling, 1877:622, fig. 8 (pl. 1).

Lycosa impavida Thorell, 1877:513. Name preoccupied in genus *Lycosa*.

Lycosa tachypoda Thorell, 1878:395. New name for *Lycosa impavida* Thorell, 1877, preoccupied.

Pardosa montana Emerton, 1885:498, figs. 5, 5*a* (pl. 49).

Pardosa tristis Keyserling, 1887:485, fig. 45 (pl. 6).

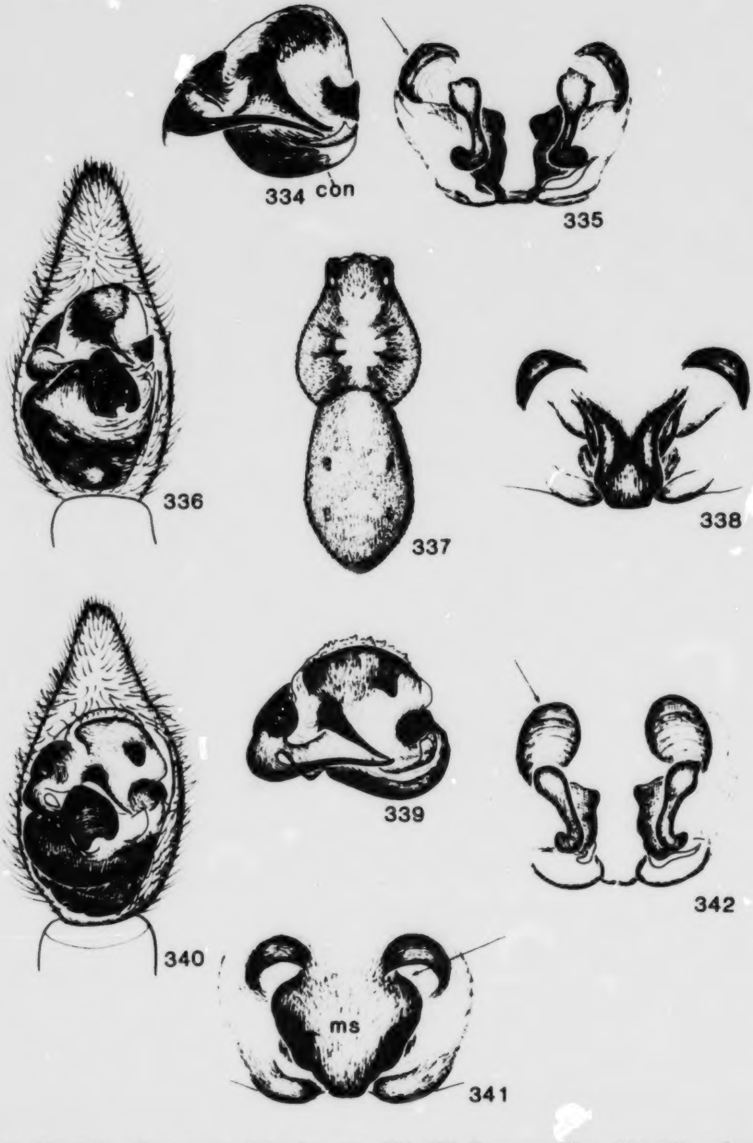
Lycosa intrepida Marx, 1890:562. New name for *Lycosa impavida* Thorell, 1877, preoccupied.

Pirata procursus Montgomery, 1902:583, fig. 48 (pl. 30).

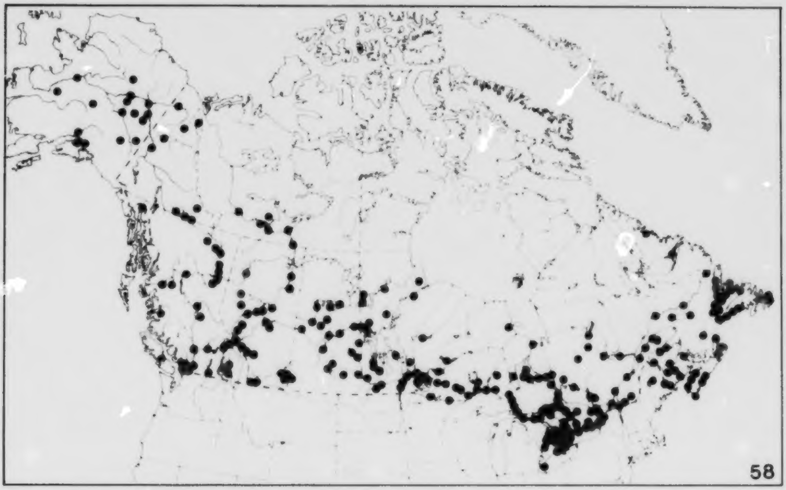
Pardosa xerampelina: Chamberlin 1904*a*:147; 1908:198, fig. 3 (pl. 14) (not fig. 4); Kaston 1948:337, figs. 1130–1132 (pl. 58), 1146 (pl. 59); Dondale and Redner 1986:820, figs. 8, 11, 33–35.

Pardosops impavidula Roewer, 1954:198. New name for *Lycosa impavida* Thorell, preoccupied.

Male. Total length 6.26 ± 0.49 mm; carapace 3.06 ± 0.22 mm long, 2.42 ± 0.15 mm wide (20 specimens measured). Carapace dark brown to black, with several radiating black lines; median area of carapace sometimes indistinct, pale; submarginal bands absent. Chelicerae dark brown, paler mesally, setaceous. Sternum dark brown to black. Legs with distal segments brownish orange; femora dark brown to black, sometimes with broad indistinct black rings. Abdomen dark reddish brown to black; heart mark (if present) dull,



Figs. 334–342. Structures of *Pardosa* spp. 334–338, *P. xerampelina*. 334, 336, palpus of male: 334, apical division, ventral view; 336, palpus, ventral view; 335, spermathecae, dorsal view; 337, body of female, dorsal view; 338, epigynum, ventral view. 339–342, *P. nordicolens*. 339, 340, palpus of male: 339, apical division, ventral view; 340, palpus, ventral view; 341, epigynum, ventral view; 342, spermathecae, dorsal view. *con*, conductor; *ms*, median septum.



Map 58. Collection localities of *Pardosa xerampelina*.

reddish; venter dull reddish brown. Palpal tibia lacking long black setae; cymbium dull yellowish, with brush of short buff setae dorsally on distal one-third; embolus long, stout at base, slender and somewhat curved distally (Fig. 334); median apophysis elongate, concealing much of embolus (ventral view), with small basal process (Fig. 336).

Female. Total length 6.76 ± 0.78 mm; carapace 3.21 ± 0.21 mm long, 2.66 ± 0.27 mm wide (20 specimens measured). Coloration essentially as in male; carapace with more distinct pale median band; submarginal bands (if present) pale, represented by series of 3 or 4 indistinct spots (Fig. 337); leg femora and tibiae with dark rings more distinct; abdomen often with series of narrow reddish chevrons on posterior part; body and legs with many short white setae. Epigynum hooded; cavities shallow, not directed mesally; median septum widening anteriorly (Fig. 338). Copulatory tubes slender, directed anterolaterally, curled at base; spermathecae small, bulbous, with few minute nodules (Fig. 335).

Comments. Males of *P. xerampelina* differ from those of the other species in the *P. xerampelina* group in the possession of an elongate median apophysis that partly conceals the embolus in ventral view. Females are distinguished by the combination of shallow hood cavities that are not directed mesally and an epigynal median septum that widens anteriorly.

Range. Alaska to Newfoundland, south to Oregon, New Mexico, and West Virginia.

Biology. Wolff (1981) gave localities, habitats, and life history of *P. xerampelina* in Michigan. Dumais et al. (1973) described male courtship. Males have been collected from April to July and females from April to early October. Egg sacs have been collected from late May to early October. Individuals have been found in short grass, among herbs along streams, in dry stony river beds and lakeshores, in cultivated fields, along roadsides, in open deciduous forests, and (rarely) in sphagnum bogs.

Pardosa nordicolens Chamberlin & Ivie

Figs. 339–342; Map 57

Pardosa nordicolens Chamberlin and Ivie, 1947:21, fig. 85 (pl. 10); Dondale and Redner 1986:822, figs. 9, 12, 36, 37.

Male. Total length 5.20–6.19 mm; carapace 2.84–3.12 mm long, 2.41–2.48 mm wide (4 specimens measured). Carapace dark brown to black, with several black radiating lines; median band (if present) pale, indistinct; submarginal bands absent. Chelicerae dark brown to black, paler mesally. Sternum dark brown to black. Legs with distal segments dark orange; femora dark brown to black. Abdomen dark gray to black; heart mark (if present) dull reddish; venter gray. Palpal cymbium yellowish, with dense brush of short setae dorsally in distal one-third; embolus long, stout at base; distal part of embolus slender and somewhat sinuous (Fig. 339); median apophysis rather large but relatively short and broad, concealing much of embolus (ventral view), with small basal process (Fig. 340).

Female. Total length 7.02–7.48 mm; carapace 3.08–3.86 mm long, 2.82–3.07 mm wide (4 specimens measured). Coloration as in male; leg femora and tibiae with faint dark rings; venter of abdomen dull reddish. Epigynum with hood cavities shallow, not directed mesally; median septum constricted anteriorly (Fig. 341). Copulatory tubes long, slender, directed anteriorly, with small coil at base; spermathecae small, bulbous or club-shaped, with few minute nodules (Fig. 342).

Comments. Males of *P. nordicolens* differ from those of the other species in the *P. xerampelina* group by possessing a broad median apophysis that conceals much of the embolus (ventral view). Females are distinguished by the combination of shallow hood cavities and an anteriorly constricted median septum.

Range. Alaska and northern Yukon Territory.

Biology. Males and females of *P. nordicolens* have been collected in June and July. The habitat is unrecorded, although five of the eight available specimens were taken from frog stomachs.

The *Pardosa saltuaria* group

Description. Total length 4.3–6.7 mm. Carapace reddish brown, with pale median and submarginal bands. Chelicerae, sternum, and legs yellowish orange. Abdomen brownish red. Palea with large sclerite near middle; terminal apophysis massive, with single tooth; embolus long, slender (Fig. 323); conductor long, with raised thickened margin at tip; median apophysis small, with short rounded distal process and large basal process (Fig. 326). Epigynal hood cavities paired, deep, well separated; median septum narrowed anteriorly and broad and angular posteriorly (Fig. 325). Copulatory tubes branched; spermathecae small, rounded (Fig. 328).

Comments. Members of the *P. saltuaria* group are distinguished from those of other groups in the genus *Pardosa* by the following characteristics: palea with large sclerite; terminal apophysis massive; embolus long and slender; conductor tip thickened and raised; median apophysis small, with distal process rounded and basal process prominent; median septum broad and angular posteriorly; copulatory tubes branched; and spermathecae small and rounded. The group was revised for North America by Dondale and Redner (1987) and is represented in Canada and Alaska only by *P. hyperborea* (Thorell).

Pardosa hyperborea (Thorell)

Figs. 323–326, 328; Map 59

Lycosa hyperborea Thorell, 1872*b*:293; Palmgren 1939:52, figs. 55, 68, 83; Holm 1947:28, figs. 54, 55 (pl. 5), 27 (pl. 10).

Lycosa hyperborea pusilla Thorell, 1872*b*:293.

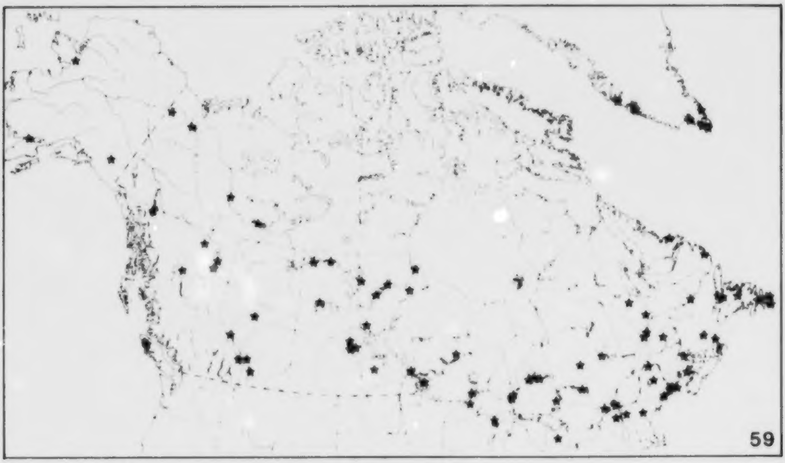
Lycosa circumcincta Collett, 1877:14.

Pardosa hyperborea: Simon 1887:456; Emerton 1921:166; Holm, 1967:79, figs. 93, 94; Wunderlich 1984:428, figs. 14–21; Dondale and Redner, 1987:10, figs. 10, 13, 30, 31, 34.

Pardosa luteola Emerton, 1894:427, figs. 7, 7*a*, 7*b* (pl. 3).

Lycosa albimontis Strand, 1909:285.

Male. Total length 4.94 ± 0.33 mm; carapace 2.49 ± 0.18 mm long, 1.71 ± 0.08 mm wide (20 specimens measured). Carapace reddish brown, with several black streaks radiating from dorsal



Map 59. Collection localities of *Pardosa hyperborea*.

groove area; median band pale; submarginal bands pale, broad, extending virtually to lateral margins of carapace. Chelicerae yellowish orange, setaceous. Sternum yellowish orange to reddish, sometimes infused with black laterally. Legs yellowish orange; scopulae sparse. Abdomen brownish red, with few black marks laterally; posterior half of abdomen usually with pale tapered median band; heart mark large, pale; venter yellowish or greenish, with light brown longitudinal bands laterally. Palpus dull yellowish brown to black, with many long black curved setae; palea with large sclerite on surface near middle; terminal apophysis massive, with single tooth; embolus long, slender, somewhat sinuous; tip of embolus resting on channel on tegulum; conductor long, transverse; tip of conductor with raised thickened margin, minutely excavated, resting on but not united with terminal apophysis (Fig. 323); median apophysis with 2 processes; distal process short, rounded; basal process prominent, straight (Fig. 326).

Female. Total length 5.16 ± 0.57 mm; carapace 2.50 ± 0.17 mm long, 1.71 ± 0.13 mm wide (20 specimens measured). Coloration (Fig. 324) as in male; leg femora occasionally with brownish red streaks; tibiae occasionally with indistinct rings. Epigynum hooded; hood cavities paired, deep, well separated; atrium broad, extending laterally beyond margins of median septum; median septum large, flat, prominent; posterior part of median septum with angular lateral margins (Fig. 325); copulatory openings situated at sides of median septum about mid length. Copulatory tubes branched; spermathecae small, rounded (Fig. 328).

Comments. *Pardosa hyperborea* is the only North American representative of the *P. saltuaria* group, and it is distinguished by the characters given for the group.

Range. Alaska to Labrador, south to Vancouver Island, Wyoming, northern Michigan, and northern New England; Greenland, Iceland; Europe.

Biology. Males of *P. hyperborea* have been collected from late May to early August and females from June to September. Egg sacs were observed in July and August. The principal habitats are sphagnum bogs, low-lying spruce forests, and rocky hillsides (where large numbers may be collected in season by pitfall traps). Many are also found among lichens in arctic and alpine tundra and on needle mats in forests of jack pine, black spruce, and balsam fir.

Genus *Allocosa* Banks

Members of the genus *Allocosa* are small to medium-sized inhabitants of the warm temperate and tropical zones of the Western Hemisphere. They live in the moister parts of meadows, pastures, crop fields, and deciduous woods, as well as in swamps and along stream banks. Representatives in the western United States appear to tolerate more dryness, but even there they are found mainly beneath stones and litter along mountain creeks and lakes.

Description. Total length 2.8–9.6 mm. Carapace usually bare and shiny, usually with pale median band; submarginal bands pale, nearly vertical in front. Anterior row of eyes somewhat procurved, equal in length to middle row or somewhat shorter; anterior median eyes larger than anterior lateral eyes. Chelicerae with 2 or 3 promarginal teeth and 3 retromarginal teeth. Legs usually reddish or reddish brown, usually with 2 dark rings on femora and 2 on tibiae; scopulae sparse; trochanters with ventral notch at tip; femur I with 3 dorsal macrosetae, 2 prolaterals (near tip); tibia I with no dorsal macrosetae, 0–3 prolaterals, no retrolaterals, 3 pairs of ventrals; basitarsus I with no dorsal macrosetae, 0–3 prolaterals, 0–3 retrolaterals, 3 pairs of ventrals, and an unpaired macroseta at tip; tibia III with 1 dorsal macroseta and 1 bristle. Abdomen usually dull yellow, spotted or reticulated with black. Cymbium often symmetrical in outline (ventral view), usually with 2 stout macrosetae at tip. Terminal apophysis beak-like; embolus rather long, fine, curved; when at rest, embolus lying within channel on dorsal surface of median apophysis (Figs. 345, 355); median apophysis functioning as conductor, with 2 dissimilar retrolateral processes (Figs. 347, 355). Epigynum with plain plate, often obscured by dense covering of fine setae; copulatory openings located inconspicuously in posterior margin of epigynal plate (Figs. 344, 350, 352). Spermathecae bulbous or pointed, with spermathecal organs (Figs. 343, 353, 356).

Comments. Characters that distinguish members of the genus *Allocosa* from those of other lycosid genera are as follows: terminal apophysis beak-like; median apophysis with two dissimilar retrolateral processes; embolus lying in channel on dorsal surface of median apophysis (which thus serves as conductor); and epigynal plate plain, with copulatory openings located inconspicuously on its posterior margin. *Allocosa* spp. resemble members of the genus *Arctosa* only in having a bare shiny carapace and mottled appearance; this is not regarded as evidence for close relationship to that genus.

The genus *Allocosa* comprises 18 species in North and Central America (Dondale and Redner 1983*b*) and an unknown number in South America. Two species occur in the United States near the Canadian border and are treated as potential members of the Canadian fauna.

Key to species of *Allocosa*

1. Carapace covered with minute punctations (Fig. 348). Femora I and II dark, usually lacking darker rings. Male with basal process of median apophysis extending less retrolaterally than distal process (ventral view, Fig. 347). Epigynum lacking excavation (posterior view; compare with Fig. 354) .... ***funerea* (Hentz)** (p. 233)

Carapace lacking punctations. Femora I and II paler, each with 2 dark rings. Male with basal process of median apophysis extending farther retrolaterally than distal process (ventral view, Fig. 355). Epigynum with excavation (posterior view, Figs. 351, 354) .... ***chamberlini* (Gertsch)** (p. 235)

Clé des espèces d'*Allocosa*

1. Partie dorsale de l'encéphalo couverte de dépressions minuscules (fig. 348). Fémurs I et II foncés, généralement sans anneaux plus foncés. Mâle ayant un processus basal sur l'apophyse médiane se prolongeant moins sur le côté arrière que le processus distal (vue ventrale, fig. 347). Épigyne sans excavation (vue postérieure, comparer fig. 354) .... ***funerea* (Hentz)** (p. 233)

Partie dorsale de l'encéphalo sans dépressions minuscules. Fémurs I et II plus pâles, chacun ayant deux anneaux foncés. Mâle avec processus basal de l'apophyse médiane se prolongeant plus sur le côté arrière que le processus distal (vue ventrale, fig. 355). Épigyne ayant une excavation (vue postérieure, fig. 341, 354) .... ***chamberlini* (Gertsch)** (p. 235)

Allocosa funerea (Hentz)

Figs. 343–349; Map 60

Lycosa funerea Hentz, 1844:393, fig. 11 (pl. 18); Emerton 1913:220, fig. 13 (pl. 2).

Lycosa rugosa Keyserling, 1877:624, figs. 9, 10 (pl. 1).

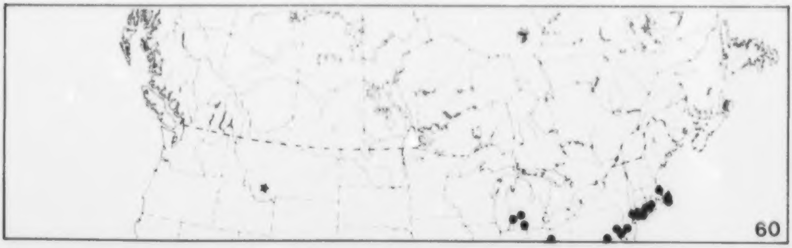
Pardosa nigra Stone, 1890:432, figs. 4, 4*a* (pl. 15).

Allocosa funerea: Banks 1900:539; Dondale and Redner 1983*b*:938, figs. 1–4, 35–37.

Allocosa rugosa: Chamberlin 1908:285, fig. 3 (pl. 23).

Arctosa funerea: Kaston 1948:321, fig. 1054 (pl. 54).

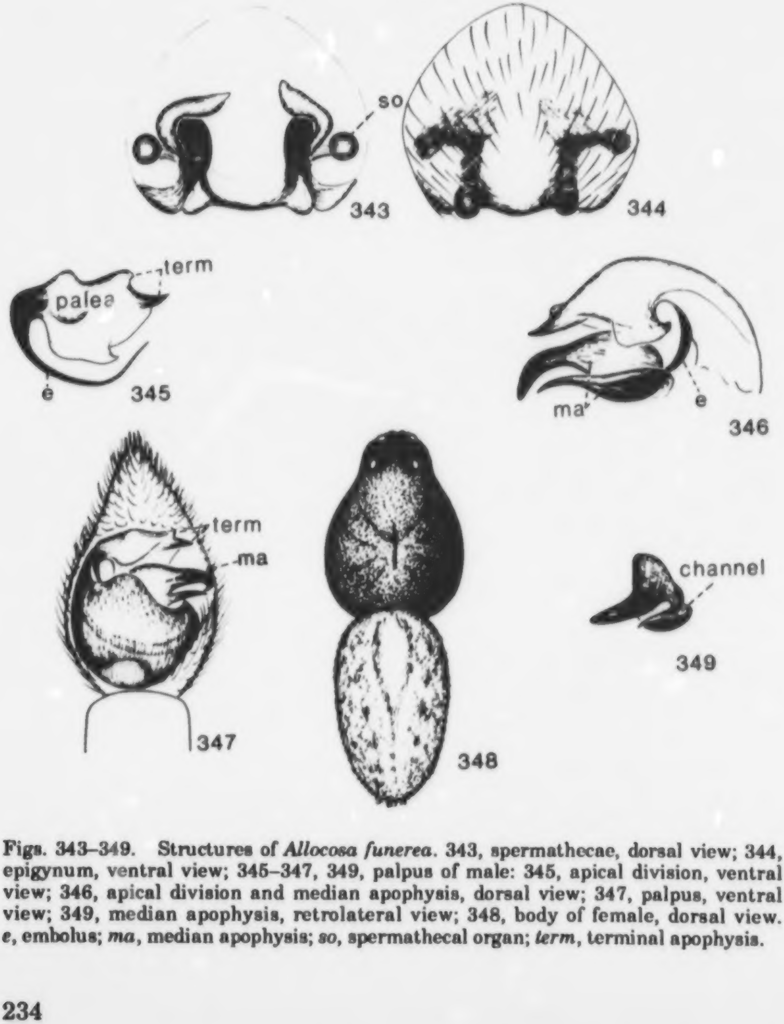
Male. Total length 3.5–4.5 mm; carapace 2.26 ± 0.17 mm long, 1.61 ± 0.13 mm wide (20 specimens measured). Carapace dark red to black, often lighter posteriorly, with many minute regular punctations; setae sparse (Fig. 348). Chelicerae dark reddish brown to black. Sternum dark brown. Legs dark orange; femora black with dark orange tips; tibiae (particularly III and IV) with 2 dark rings. Abdomen dark yellow dorsally, with many small dark spots; venter yellow or orange, with few small black spots. Median apophysis with 2 processes; distal process long, abruptly angled at tip; basal process extending less far retrolaterally than distal process (Figs. 345–347, 349).



Map 60. Collection localities of *Allocosa funerea* (●) and *A. chamberlini* (★).

Female. Total length 4.0–5.6 mm; carapace 2.40 ± 0.10 mm long, 1.76 ± 0.11 mm wide (20 specimens measured). Coloration essentially as in male but leg femora often paler; tibial rings less distinct. Epigynum (Fig. 344) with plate; plate variably depressed posteriorly between copulatory openings, lacking excavation. Spermathecae rather slender, pointed (Fig. 343).

Comments. Specimens of *A. funerea* are distinguished by the following characteristics: carapace punctate; carapace and leg femora dark; leg femora lacking darker rings; basal process of median



Figs. 343–349. Structures of *Allocosa funerea*. 343, spermathecae, dorsal view; 344, epigynum, ventral view; 345–347, 349, palpus of male: 345, apical division, ventral view; 346, apical division and median apophysis, dorsal view; 347, palpus, ventral view; 349, median apophysis, retrolateral view; 348, body of female, dorsal view. *e*, embolus; *ma*, median apophysis; *so*, spermathecal organ; *term*, terminal apophysis.

apophysis extending less far retrolaterally than distal process; epigynum lacking excavation; and spermathecae rather slender and pointed.

Range. Kansas and southern Michigan to Massachusetts, south to Texas and Florida.

Biology. Many specimens of *A. funerea* have been collected in fields, meadows, lawns, and gardens, and in pine forests. A few were found inside houses. Both sexes have been collected from April to September, with females occasionally found in October.

Allocosa chamberlini (Gertsch)

Figs. 350–357; Map 60

Arctosa chamberlini Gertsch, 1934*a*:10.

Allocosa chamberlini: Roewer 1954:209; Dondale and Redner 1983*b*:940, figs. 22, 23, 74–79.

Male. Total length 3.5–5.9 mm; carapace 2.71 ± 0.29 mm long, 1.91 ± 0.21 mm wide (20 specimens measured). Carapace dark reddish brown, veined with black, with few setae; median band pale, indistinct; submarginal bands pale or represented by series of spots. Chelicerae reddish brown. Sternum pale orange, often suffused with gray. Legs orange; femora and tibiae each with 2 indistinct dark rings. Abdomen dull yellow dorsally, moderately to densely spotted with black; venter dull yellow, often with several small black spots. Median apophysis with 2 processes; distal process slender, strongly curved toward tip; basal process curved, extending farther retrolaterally than distal process (Figs. 355, 357).

Female. Total length 4.8–6.8 mm; carapace 2.72 ± 0.27 mm long, 1.92 ± 0.22 mm wide (20 specimens measured). Coloration as in male. Epigynum variable (Figs. 350, 352), with deep excavation (posterior view, Figs. 351, 354). Spermathecae somewhat dumbbell-shaped (Figs. 353, 356).

Comments. Specimens of *A. chamberlini* are distinguished by the following characteristics: carapace lacking punctations; leg femora paler and having dark rings; basal process of median apophysis extending farther retrolaterally than distal process (ventral view); and epigynal plate possessing excavation (posterior view).

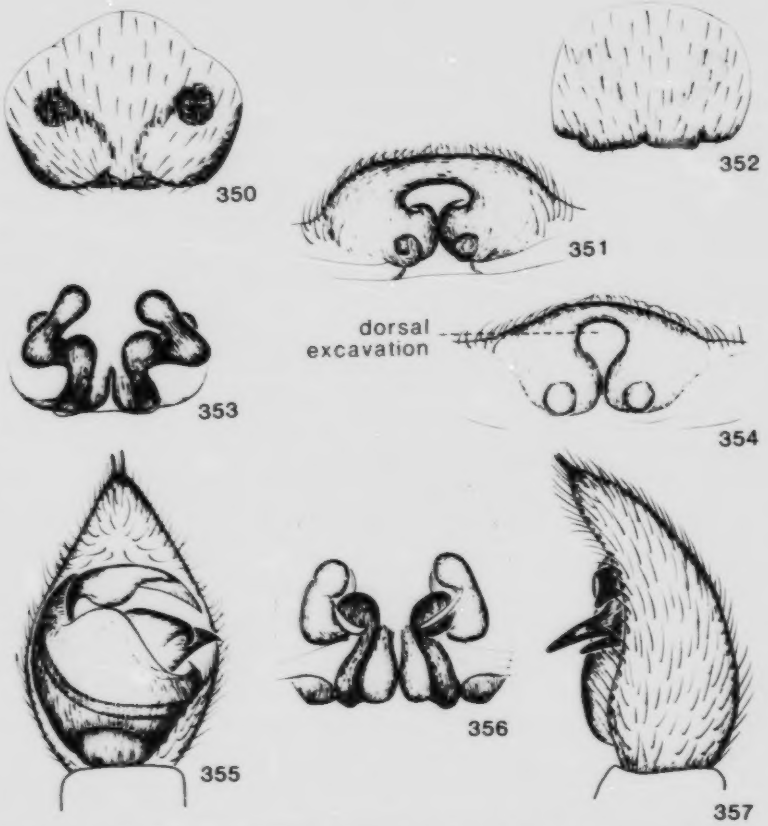
Range. Montana and Nebraska, south to Arizona and New Mexico.

Biology. Specimens have been collected under stones near water. The period of maturity is not recorded.

Genus *Trabeops* Roewer

Specimens of *Trabeops* spp. are small and mainly orange or yellow in color. They usually live in litter in deciduous woods.

Description. Total length 2.6–4.1 mm. Carapace shiny, sparsely covered with short setae. Anterior row of eyes shorter than middle row; eyes of middle row large, protruding anteriorly beyond



Figs. 350–357. Genitalia of *Allocosa chamberlini*. 350–352, 354, epigynums; 350, 352, ventral view; 351, 354, basal view; 353, 356, spermathecae, dorsal view; 355, 357, palpus of male: 355, ventral view; 357, retrolateral view.

front of carapace; eyes of posterior row widely separated, protruding laterally beyond sides of carapace. Chelicerae with 2 retromarginal teeth. Legs moderately long and stout; scopulae sparse; femur I with midventral row of stiff slender setae; tibia I with 4 pairs of ventral macrosetae; macrosetae long, dark, overlapping. Palpus of male (Fig. 360) with subtegulum long; subtegulum lying on prolateral side of and extending one-third length of genital bulb; palea small, well sclerotized; palea giving rise to embolus on prolateral side and to terminal apophysis on retrolateral side; embolus short, flat, curved, with tip resting on tip of terminal apophysis; terminal apophysis slender, erect; median apophysis long, slender, oriented longitudinally, attached at middle and free at both ends. Epigynal median septum (Fig. 361) distinct, slender; posterior end of median septum somewhat expanded; anterior end of median septum flaring far to sides; copulatory openings situated posteriorly at sides of median septum. Copulatory tubes short, slender; spermathecae small, bulbous, not visible through integument (Fig. 358).

Comments. The single representative of the genus *Trabeops* is distinguished from those of the other North American genera of wolf spiders by the following characteristics: posterior median eyes protruding anteriorly; posterior lateral eyes widely spaced and protruding laterally; median apophysis long, oriented longitudinally, and attached at middle; anterior end of median septum greatly flared laterally; and femur I with midventral row of stiff erect setae.

The genus *Trabeops* is represented only by *T. aurantiaca* (Emerton), which occurs in eastern Canada and eastern United States.

Trabeops aurantiaca (Emerton)

Figs. 358–361; Map 61

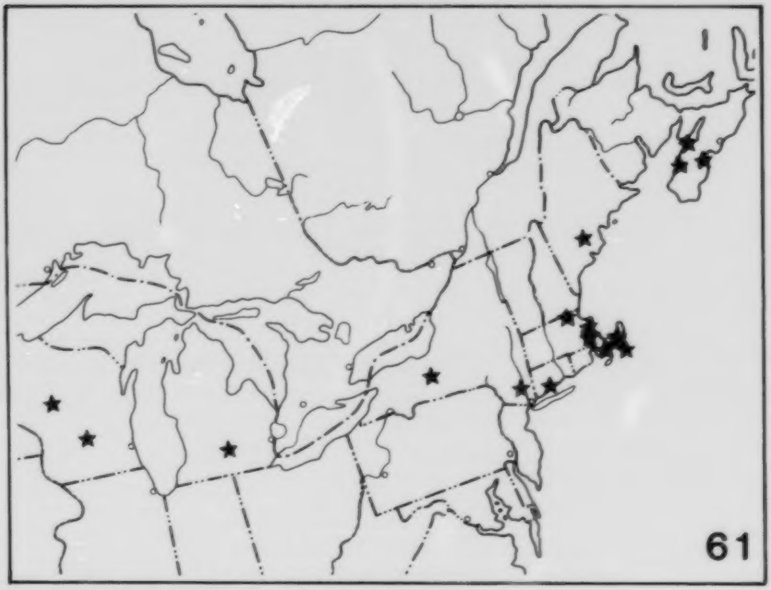
Aulonia aurantiaca Emerton, 1885:499, figs. 6, *6a*, *6b* (pl. 49).

Trabea aurantiaca: Chamberlin 1908:296, figs. 7–9 (pl. 11), 1–4 (pl. 12); Kaston 1948:305, figs. 997–1000 (pl. 50).

Trabeops aurantiaca: Roewer 1959:169.

Trabaeops aurantiaca: Russell-Smith 1982:70.

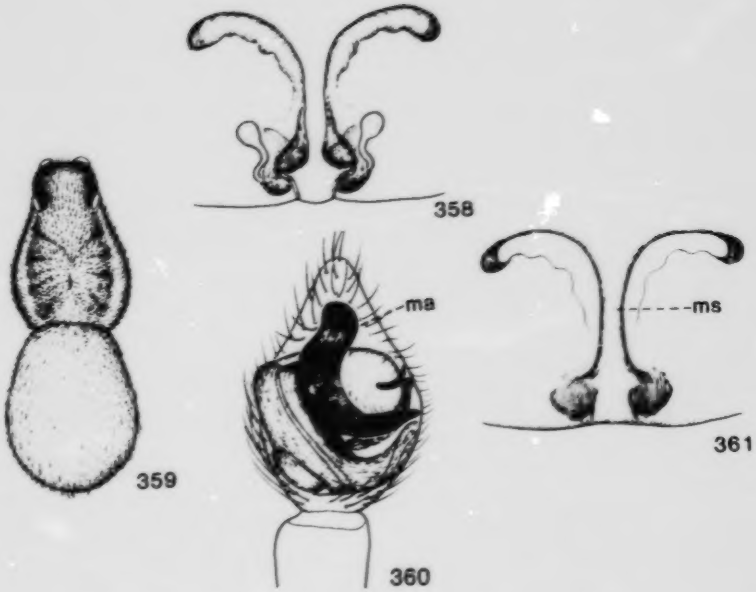
Male. Total length 2.95 ± 0.17 mm; carapace 1.62 ± 0.09 mm long, 1.09 ± 0.06 mm wide (20 specimens measured). Carapace approximately uniform in height from dorsal groove to middle row of eyes. Anterior row of eyes distinctly procurved, uniform in size; anterior median eyes somewhat closer to each other than to anterior lateral eyes. Sternum pale orange, sometimes darker at margins. Chelicerae orange, reticulated with black. Legs yellow to dark orange; setae short, sparse; femur I (and sometimes femur II) black;



Map 61. Collection localities of *Trabeops aurantiaca.*

femur I with 3 dorsal macrosetae and 3 prolateral macrosetae near tip; tibia I with 2 bristle-like dorsal macrosetae, 1 prolateral, 1 retrolateral or none, 4 pairs of ventrals (none at tip); basitarsus I with 1 bristle-like dorsal macroseta, 2 or 3 prolaterals, 1 or 2 retrolaterals, 3 pairs of ventrals, and a small unpaired macroseta at tip. Abdomen ovoid, dull orange or dull yellow dorsally, sometimes with series of chevrons; heart mark pale (if present); venter pale, usually unmarked. Palpus brown to black; cymbium paler; tibia with 7–9 stout dorsal or prolateral macrosetae; tegulum deeply and broadly excavated mesally; tegulum receiving median apophysis (Fig. 360); median apophysis with 2 processes; distal process somewhat flattened, curved, angulate dorsally; basal process pointed, directed ventrally (Fig. 360).

Female. Total length 3.54 ± 0.24 mm; carapace 1.70 ± 0.12 mm long, 1.19 ± 0.08 mm wide (16 specimens measured). Coloration essentially as in male (Fig. 359). Leg I with patella and tibia (as well as femur) black. Epigynum with large plate; median septum long, slender, flaring to the sides anteriorly (Fig. 361). Copulatory tubes short, slender; spermathecae small, bulbous (Fig. 358).



Figs. 358–361. Structures of *Trabeops aurantiaca*. 358, spermathecae, dorsal view; 359, body of female, dorsal view; 360, palpus of male, ventral view; 361, epigynum, ventral view. *ma*, median apophysis; *ms*, median septum.

Comments. Diagnostic characters for *T. aurantiaca* are the protruding eyes of the middle and posterior rows and the greatly flared median septum.

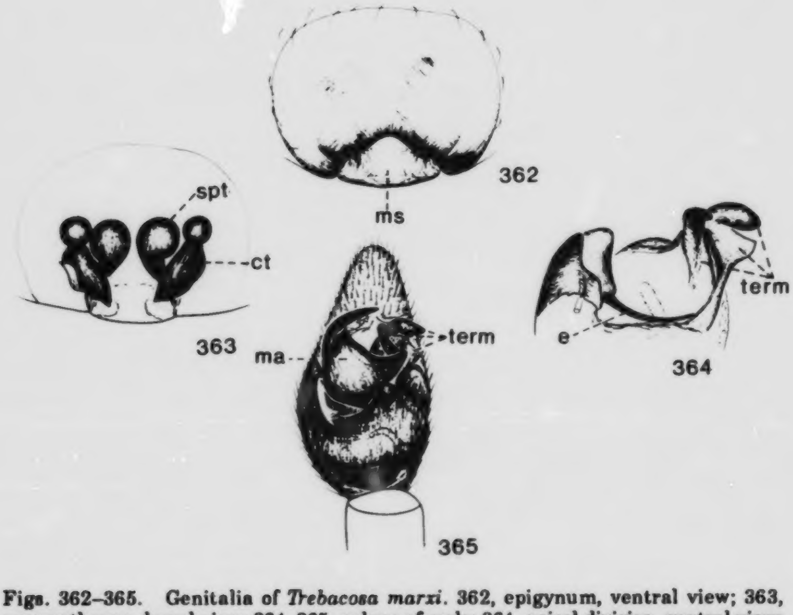
Range. Wisconsin to Nova Scotia, south to Tennessee and Georgia.

Biology. Specimens have been collected in pitfall traps placed in oak and pine woods, in swamps, and along creeks or lakeshores. Adults of both sexes have been taken from mid May to early August, and females with egg sacs were found from late June to mid August. The egg sacs are small, round, and white.

Genus *Trebacosa* Dondale & Redner

Specimens of the genus *Trebacosa* are medium sized and dull in color. They are scarce in collections, and little is known of their biology except that the available specimens were largely collected in pitfall traps in wet habitats such as freshwater marshes, swamps, and bogs.

Description. Total length 6.00–8.75 mm. Carapace approximately uniform in height between dorsal groove and posterior row of eyes, sloped on front. Chelicerae with 2 retromarginal teeth. Legs moderately long and stout, lacking dark rings; scopulae sparse. Palpus of male with small stridulatory organ prolaterally at tip of tibia; subtegulum small; palea inconspicuous, giving rise to embolus prolaterally and to apophysis retrolaterally; embolus hair-like, arching across distal end of genital bulb, with tip resting in groove along process of terminal apophysis; terminal apophysis short, rigid; median apophysis massive, armed with a large distal process and a somewhat smaller basal process (Figs. 364, 365). Epigynum (Fig. 362) with convex, approximately rectangular plate, with median septum at posterior end; median septum distinct, depressed,



Figs. 362–365. Genitalia of *Trebacosa marxi*. 362, epigynum, ventral view; 363, spermathecae, dorsal view; 364, 365, palpus of male: 364, apical division, ventral view; 365, palpus, ventral view. *ct*, copulatory tube; *e*, embolus; *ma*, median apophysis; *ms*, median septum; *spt*, spermatheca; *term*, terminal apophysis.

triangular; copulatory openings inconspicuous, at sides of median septum. Copulatory tubes long, stout; spermathecae large, bulbous (Fig. 363).

Comments. The single described representative of the genus *Trebacosa* is distinguished from those of other lycosid genera by the following characteristics: body of medium size and dull coloring; chelicera with 2 retromarginal teeth; embolus hair-like and arching across distal end of genital bulb; median apophysis massive and oriented longitudinally; epigynal atrium small, depressed, triangular, and situated at posterior end of plate; and spermathecae large and bulbous.

The genus *Trebacosa* is represented by the single species *T. marxi* (Stone), which is found in eastern Canada and eastern United States.

Trebacosa marxi (Stone)

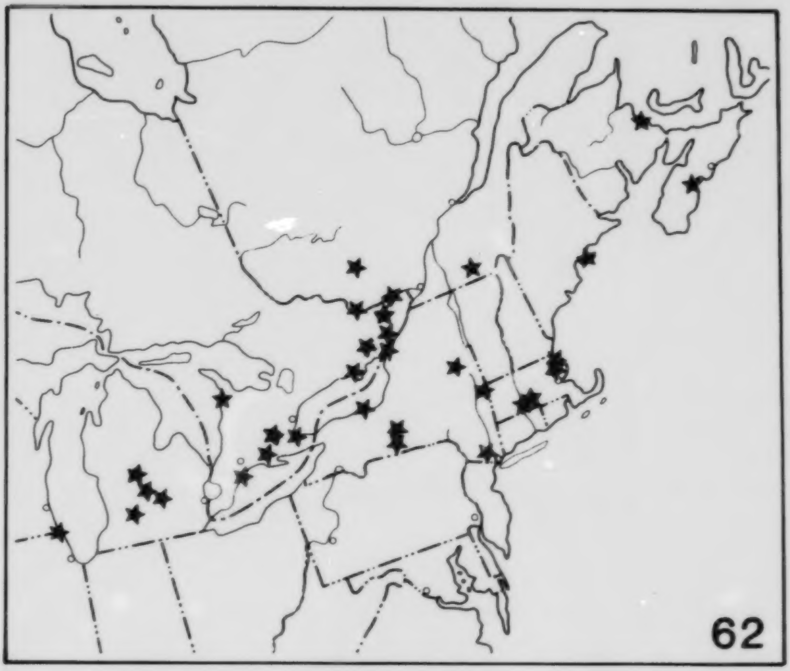
Figs. 362–365; Map 62

Pirata marxi Stone, 1890:429, figs. 1, 1*a* (pl. 15); Chamberlin 1908:307, figs. 8 (pl. 21), 8 (pl. 22); Kaston 1948:309, figs. 985, 986 (pl. 49), 1006 (pl. 50); Wallace and Exline 1978:93, figs. 199–203.

Trebacosa marxi: Dondale and Redner 1981:109, figs. 1–4.

Male. Total length 6.00–8.75 mm; carapace 3.40 ± 0.32 mm long, 2.45 ± 0.21 mm wide (20 specimens measured). Carapace dark orange; margins darker; submarginal bands pale; median band narrow, pale. Anterior row of eyes as long as middle row, procurved, straight, or recurved; anterior median eyes equal to or somewhat larger than anterior lateral eyes. Legs yellowish orange, darker distally; scopulae sparse; femur I with 1 prolateral macroseta; tibia I with 2 or 3 pairs of ventral macrosetae; basitarsus I with 2 pairs of ventral macrosetae and (sometimes) an unpaired macroseta at tip. Abdomen with mottled black pattern; heart mark indistinct; venter yellowish orange. Tibia of palpus approximately twice as long as wide; embolus arching across distal end of genital bulb; tip of embolus resting in groove of terminal apophysis (Fig. 364); median apophysis massive, oriented longitudinally, with a distal and a basal process (Fig. 365).

Female. Total length 5.40–8.75 mm; carapace 3.58 ± 0.33 mm long, 2.66 ± 0.27 mm wide (20 specimens measured). Coloring essentially as in male. Epigynum with posterior plate; plate small, rectangular, depressed; copulatory openings inconspicuous, situated at sides of median plate (Fig. 362). Copulatory tubes long, stout; spermathecae large, bulbous (Fig. 363).



Map 62. Collection localities of *Trebacosa marxi*.

Comments. Specimens of *T. marxi* are distinguished by the following characteristics: median apophysis massive and oriented longitudinally; embolus arching across distal end of genital bulb; and spermathecae large and bulbous.

Range. Illinois and southern Ontario to Nova Scotia, south to Arkansas and Florida.

Biology. Adults of both sexes have been collected from April to December. Kaston (1948) indicated that both adults and juveniles overwinter in Connecticut. Wallace and Exline (1978) recorded egg sacs in July. The known habitats are wet swampy places.

Genus *Pirata* Sundevall

Spiders of the genus *Pirata* possess small to medium, dark slender bodies. Some live in moist meadows or forests, but most are strongly hygrophilous and live in swamps, bogs, and marshes or on the margins of rivers, lakes, and ponds. They move easily on and under the water's surface, using partly submerged plants for footholds; some build silken tubes leading to the water from surrounding sphagnum plants (Nøgaard 1951, Bristowe 1971). At least two species, *P. piraticus* (Clerck) and *P. sedentarius* Montgomery, occupy tidal salt marshes as well as inland habitats. The egg sacs are small, round, thin-walled, and conspicuous because of their striking whiteness.

Description. Total length usually 4–8 mm. Carapace shiny, rather low, uniform in height between dorsal groove and posterior row of eyes, and vertical in front; carapace in most cases bearing conspicuous V-shaped mark in front of dorsal groove (Figs. 366, 384); setae few. Anterior row of eyes usually shorter than middle row, usually somewhat procurved; anterior median eyes usually larger than anterior lateral eyes. Chelicerae slender; retromargin with 2 or 3 teeth. Legs pale or dark, usually with dark rings; femur I with 3 dorsal macrosetae, 1 prolateral; tibia I usually with 3 pairs of ventral macrosetae. Abdomen usually dark dorsally, pale ventrally. Palpus of male with subtegulum situated basally on prolateral side of tegulum; subtegulum conspicuously enlarged, extending one-fourth to one-half length of genital bulb (Figs. 369, 389, 401); median apophysis and organs of apical division correspondingly reduced; palea protruding lip-like at tip of bulb; palea giving rise on prolateral side to minute embolus and similarly minute terminal apophysis; embolus resting in groove formed by folded margin of terminal apophysis; median apophysis oriented longitudinally, with distal and (usually) basal process. Epigynum (Figs. 368, 381, 395) with plain, somewhat convex plate; epigynum frequently lacking both atrium and median septum; copulatory openings usually inconspicuous, in posterior margin of plate. Copulatory tubes short; spermathecae small, dark, conical or elliptical, situated posteriorly, usually visible through integument of plate (Figs. 367, 382, 392).

Comments. Members of the genus *Pirata* are distinguished from those of other lycosid genera by the following characteristics: body usually small; carapace shiny and nearly always possessing a V-shaped mark; femur I with 1 prolateral macroseta; subtegulum enlarged and prolateral in position; embolus and terminal apophysis minute and arising together prolaterally; median apophysis oriented longitudinally; epigynal plate plain; and spermathecae usually visible through integument of epigynal plate.

The genus *Pirata* comprises a world fauna of approximately 60 species. North American species number 33, of which 13 occur or probably occur in Canada. Wallace and Exline (1978) revised the North American species.

Key to species of *Pirata*

Males

1. Median apophysis extending distally to or beyond tip of alveolus (Figs. 369, 389, 401) 2

Median apophysis shorter, not extending to tip of alveolus (Figs. 418, 421, 430) 11

2(1). Median apophysis with dorsal tooth projecting toward base (retrolateral view, Figs. 373, 379, 386) 3

Median apophysis lacking dorsal tooth 5

3(2). Distitarsus I curved (Fig. 371). Carapace 1.20 mm in width or less, usually with pale lateral margins (as in Fig. 366). Venter of abdomen usually with 3 dark coalescent bands .... ***canadensis* Dondale & Redner** (p. 251)

Disitarsus I straight. Carapace 1.32 mm in width or more, usually with dark lateral margins (as in Fig. 384). Venter of abdomen usually with slender separate bands 4

4(3). Tibia and basitarsus I distinctly swollen; basitarsus I with many long curly setae ventrally (Fig. 375) .... ***cantralli* Wallace & Exline** (p. 253)

Tibia and basitarsus I not swollen; basitarsus I lacking long curly setae .... ***insularis* Emerton** (p. 255)

5(2). Median apophysis with conical process near midlength (Fig. 389) .... ***aspirans* Chamberlin** (p. 257)

Median apophysis lacking conical process 6

6(5). Median apophysis with concavity narrow (Fig. 406) or absent (retrolateral view) 7

Median apophysis with broad concavity (retrolateral view, Fig. 393) .... ***giganteus* Gertsch** (p. 259)

7(6). Carapace, abdomen, sternum, and legs I and II (except tarsi) totally black. Carapace lacking V-shaped mark (Fig. 399) .... ***bryantae* Kurata** (p. 260)

Carapace, abdomen, sternum, and legs I and II with at least some pale areas. Carapace with V-shaped mark (Fig. 403) 8

8(7). Carapace and femora I and II dark orange suffused with black .... ***minutus* Emerton** (p. 262)

Carapace with pale margins or with dark margins and pale submarginal bands. Femora I and II with light and dark areas 9

9(8). Median apophysis with narrow dorsal concavity (retrolateral view) (Fig. 406) .... ***seminola* Gertsch & Wallace** (p. 264)

Median apophysis without dorsal concavity 10

10(9). Legs (especially I) with many long erect setae ventrally .... ***sedentarius* Montgomery** (p. 266)

Legs with sparse short recumbent setae .... ***montanoides* Banks** (p. 267)

11(1). Femora I and II orange or yellowish brown 12

Femora I and II gray to black .... ***montanus* Emerton** (p. 269)

12(11). Median apophysis rounded distally, with beak-like process on retrolateral side and with rounded basal process (Figs. 421, 426). Carapace with broad pale margins (as in Fig. 424) .... ***piraticus* (Clerck)** (p. 270)

Median apophysis truncate distally, pointed retrolaterally, with pointed basal process (Figs. 425, 430). Carapace with dark margins and pale submarginal bands (as in Fig. 432) .... ***zelotes* Wallace & Exline** (p. 273)

Key to species of *Pirata*

Females

1. Carapace with broad pale margins or with dark margins and pale submarginal bands (Figs. 384, 424) 4

Carapace without pale margins or submargins (Figs. 399, 420) or if with narrow pale margins (Fig. 403), then carapace width 1.40 mm or less 2

2(1). Carapace with V-shaped mark (Figs. 403, 420) 3

Carapace entirely dark (Fig. 399) .... ***bryantae* Kurata** (p. 260)

3(2). Spermathecae concave mesally, well separated (Fig. 402). Carapace less than 1.40 mm in width .... ***minutus*** **Emerton** (p. 262)

Spermathecae convex mesally, touching at midline (Fig. 419). Carapace more than 1.40 mm in width .... ***montanus*** **Emerton** (p. 269)

4(1). Epigynum with median septum depressed; copulatory openings and spermathecae situated anteriorly (Figs. 392, 395) .... ***giganteus*** **Gertsch** (p. 259)

Epigynum lacking median septum; copulatory openings and spermathecae situated at posterior end of epigynum (Figs. 374, 388, 405) 5

5(4). Epigynum with posterior processes pointed; copulatory openings large, distinct, situated on mesal surfaces of posterior processes (Fig. 388) .... ***aspirans*** **Chamberlin** (p. 257)

Epigynum with posterior processes rounded; copulatory openings smaller, indistinct, situated somewhat more anteriorly (Figs. 374, 405) 6

6(5). Spermathecal organ as large as, or somewhat larger than, spermatheca (Figs. 422, 429) 7

Spermathecal organ distinctly smaller than spermatheca (Figs. 377, 407, 416) 8

7(6). Carapace with broad pale margins (Fig. 424) .... ***piraticus*** **(Clerck)** (p. 270)

Carapace with dark margins and pale submarginal bands (Fig. 432) .... ***zelotes*** **Wallace & Exline** (p. 273)

8(6). Chelicera with 2 retromarginal teeth .... ***montanoides*** **Banks** (p. 267)

Chelicera with 3 retromarginal teeth 9

9(8). Spermathecae extending anterolaterally (Figs. 367, 377, 382) 10

Spermathecae extending anteriorly (Figs. 407, 411, 413) 11

10(9). Carapace 1.28 mm wide or less, usually with pale lateral margins (Fig. 366). Venter of abdomen usually with 3 dark coalescent bands .... ***canadensis*** **Dondale & Redner** (p. 251)

Carapace 1.43 mm wide or more, usually with dark lateral margins (Fig. 384). Venter of abdomen usually with slender separate bands .... ***insularis*** **Emerton** (p. 255),

.... ***cantralli*** **Wallace & Exline** (p. 253)

11(9). Legs with numerous long erect setae ventrally. Copulatory openings usually situated on mesal surfaces of posterior processes (Figs. 409, 410, 412). Carapace usually 1.60 mm wide or more .... ***sedentarius* Montgomery** (p. 266)

Legs with sparse short recumbent setae. Copulatory openings situated anterior to posterior processes (Fig. 405). Carapace usually less than 1.50 mm wide .... ***seminola* Gertsch & Wallace** (p. 264)

Clé des espèces de *Pirata*

Mâles

1. Apophyse médiane se prolongeant jusqu'à l'extrémité ou au-delà de l'embolus (fig. 369, 389, 401) 2

Apophyse médiane plus courte, ne se prolongeant pas jusqu'à l'extrémité de l'embolus (fig. 418, 421, 430) 11

2(1). Apophyse médiane pourvue d'une dent dorsale se prolongeant vers la base (vue du côté arrière, fig. 373, 379, 386) 3

Apophyse médiane sans dent dorsale 5

3(2). Distitarse I courbé (fig. 371). Partie dorsale de l'encéphalo large de 1,20 mm ou moins, généralement ayant des marges latérales pâles (comme dans la fig. 366); partie ventrale de l'abdomen ayant généralement trois bandes groupées et foncées ....***canadensis* Dondale & Redner** (p. 251)

Distitarse I droit. Partie dorsale de l'encéphalo large de 1,32 mm ou plus, ayant généralement des marges latérales foncées (comme dans la fig. 384); partie ventrale de l'abdomen ayant généralement des bandes grêles et séparées 4

4(3). Tibia et basitarse I distinctement renflés, et basitarse I ayant beaucoup de poils longs et frisés sur le ventre (fig. 375) .... ***cantralli* Wallace & Exline** (p. 253)

Tibia et basitarse I non renflés, et basitarse I sans poils longs et frisés .... ***insularis* Emerton** (p. 255)

5(2). Apophyse médiane ayant un processus conique près du milieu (fig. 389) .... ***aspirans* Chamberlin** (p. 257)

Apophyse médiane sans processus conique 6

6(5). Apophyse médiane, vue du côté arrière, ayant une concavité étroite (fig. 406) ou sans concavité 7

Apophyse médiane, vue du côté arrière, ayant une concavité large (fig. 393) .... ***giganteus* Gertsch** (p. 259)

7(6). Partie dorsale de l'encéphalo, abdomen, sternum et pattes I et II (sauf les tarses) entièrement noirs et partie dorsale de l'encéphalo sans signe en V (fig. 399) .... ***bryantae* Kurata** (p. 260)

Partie dorsale de l'encéphalo abdomen, sternum et pattes I et II avec au moins des aires pâles, et partie dorsale de l'encéphalo avec signe en V (fig. 403) 8

8(7). Partie dorsale de l'encéphalo et fémurs I et II orange foncé sur fond noir .... ***minutus* Emerton** (p. 262)

Partie dorsale de l'encéphalo ayant des marges pâles ou foncées et des bandes submarginales pâles; fémurs I et II avec des taches pâles et d'autres foncées 9

9(8). Apophyse médiane ayant une concavité dorsale étroite (vue du côté arrière, fig. 406) .... ***seminola* Gertsch & Wallace** (p. 264)

Apophyse médiane sans concavité dorsale 10

10(9). Pattes (particulièrement I) pourvues de beaucoup de poils longs et dressés sur le ventre ....***sedendarius* Montgomery** (p. 266)

Pattes pourvues de poils espacés et couchés .... ***montanoides* Banks** (p. 267)

11(1). Fémurs I et II orangés ou brun jaunâtre 12

Fémurs I et II gris à noir .... ***montanus* Emerton** (p. 269)

12(11). Apophyse médiane arrondie au bout, avec processus en forme de bec sur le côté arrière et avec processus basal arrondi (fig. 421, 426). Partie dorsale de l'encéphalo ayant des marges pâles et larges (comme dans la fig. 424) .... ***piraticus* (Clerck)** (p. 270)

Apophyse médiane tronquée au bout, pointue sur le côté arrière avec processus basal pointu (fig. 425, 430). Partie dorsale de l'encéphalo ayant des marges foncées et des bandes submarginales pâles (comme dans la fig. 432) .... ***zelotes* Wallace & Exline** (p. 273)

Clé des espèces de *Pirata*

Femelles

1. Partie dorsale de l'encéphalo ayant des marges pâles et larges, ou des marges foncées et des bandes submarginales pâles (fig. 384, 424) 4

Partie dorsale de l'encéphalo sans marges ou submarges pâles (fig. 3[illegible], 420) ou, si pourvue de marges pâles et étroites (fig. 403), partie dorsale de l'encéphalo alors d'une largeur de 1,4 mm ou moins 2

2(1). Partie dorsale de l'encéphalo ayant un signe en V (fig. 403, 420) 3

Partie dorsale de l'encéphalo entièrement noire (fig. 399) .... ***bryantae*** **Kurata** (p. 260)

3(2). Spermathèques concaves au milieu, nettement séparées (fig. 402). Largeur de la partie dorsale de l'encéphalo 1,40 mm .... ***minutus*** **Emerton** (p. 262)

Spermathèques convexes au milieu se touchant au milieu du corps (fig. 419). Largeur de la partie dorsale de l'encéphalo : plus que 1,40 mm .... ***montanus*** **Emerton** (p. 269)

4(1). Épigyne ayant un septum médian déprimé; orifices copulatoires et spermathèques situés antérieurement (fig. 392, 395) .... ***giganteus*** **Gertsch** (p. 259)

Épigyne sans septum médian; orifices copulatoires et spermathèques situés à l'extrémité de l'épigyne (fig. 374, 388, 405) 5

5(4). Épigyne ayant des processus postérieurs pointus; orifices copulatoires gros, distincts, situés sur les surfaces mésales des processus postérieurs (fig. 388) ....***aspirans*** **Chamberlin** (p. 257)

Épigyne ayant des processus postérieurs arrondis; orifices copulatoires plus petits, indistincts, situés plus loin antérieurement (fig. 374, 405) 6

6(5). Organe spermathécal aussi gros que ou plus gros que la spermathèque (fig. 422, 429) 7

Organe spermathécal nettement plus petit que la spermathèque (fig. 377, 407, 416) 8

7(6). Partie dorsale de l'encéphalo ayant des marges pâles et larges (fig. 424) .... ***piraticus* (Clerck)** (p. 270)

Partie dorsale de l'encéphalo ayant des marges foncées et des bandes submarginales pâles (fig. 432) .... ***des zelotes* Wallace & Exline** (p. 273)

8(6). Chélicères pourvus de deux dents à la marge arrière.. ***montanoides* Banks** (p. 267)

Chélicères pourvus de trois dents à la marge arrière 9

9(8). Spermathèques s'étendant du côté antérieur (fig. 367, 377, 382) 10

Spermathèques s'étendant antérieurement (fig. 407, 411, 413) 11

10(9). Partie dorsale de l'encéphalo : largeur 1,28 mm ou moins, ayant généralement les marges latérales pâles (fig. 366). Partie ventrale de l'abdomen ayant généralement trois bandes groupées et foncées .... ***canadensis* Dondale & Redner** (p. 251)

Partie dorsale de l'encéphalo : largeur 1,43 mm ou plus, ayant généralement les marges latérales pâles (fig. 384). Partie ventrale de l'abdomen ayant généralement des bandes grêles et séparées .... ***insularis* Emerton** (p. 255),
.... ***cantralli* Wallace & Exline** (p. 253)

11(9). Pattes pourvues de nombreuses soies longues et dressées ventralement. Orifices copulatoires généralement situés sur les surfaces mésales des processus postérieurs (fig. 409, 410, 412). Partie dorsale de l'encéphalo généralement large de 1,60 mm ou plus ..... ***sedentarius* Montgomery** (p. 266)

Pattes avec soies courtes, espacées et courbées. Orifices copulatoires situés aux processus antérieurs à postérieurs (fig. 405). Partie dorsale de l'encéphalo généralement moins large que 1,50 mm . ***seminola* Gertsch & Wallace** (p. 264)

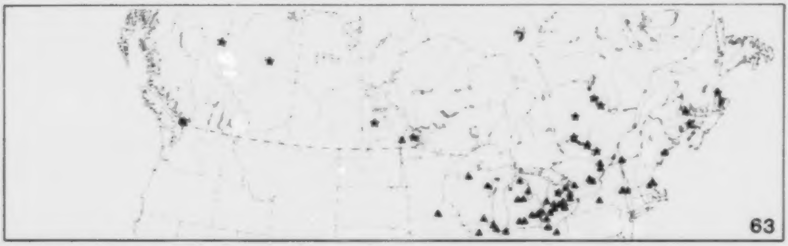
Pirata canadensis Dondale & Redner

Figs. 366–373; Map 63

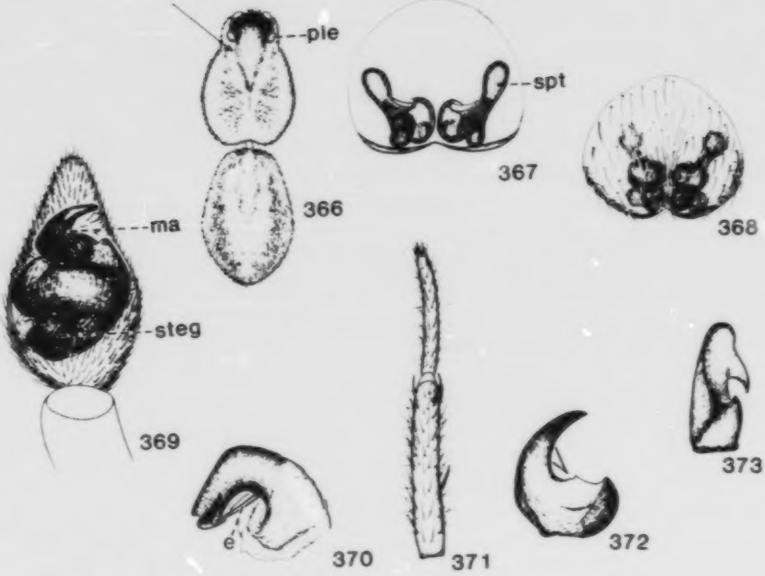
Pirata canadensis Dondale and Redner, 1980:194, figs. 1–8.

Male. Total length approximately 3 mm; carapace 1.71 ± 0.07 mm long, 1.13 ± 0.05 mm wide (15 specimens measured). Carapace iridescent, brownish to orange, with distinct V-shaped mark; margins usually broad, pale, sometimes dark; longitudinal bands paired, dark. Anterior row of eyes shorter than middle row, somewhat procurved, approximately uniformly spaced; anterior median eyes somewhat larger than anterior lateral eyes. Sternum brownish yellow, sometimes suffused with black; sternum sometimes with indistinct pale median band and series of submarginal spots. Chelicerae brownish yellow; retromargin with 3 teeth. Legs pale brownish yellow, lacking dark rings; distitarsus I somewhat curved (Fig. 371). Abdomen dorsally brownish yellow, with dark reticulated pattern; heart mark indistinct; venter pale brownish yellow, often with median and 2 lateral bands coalescing. Median apophysis long, curved, with stout tooth on dorsal surface; median apophysis extending distally beyond tip of alveolus (Figs. 372, 373).

Female. Total length approximately 3.75 mm; carapace 1.78 ± 0.09 mm long, 1.19 ± 0.06 mm wide (17 specimens measured). Coloring essentially as in male, but body sometimes paler (Fig. 366). Anterior median eyes sometimes equal in size to anterior lateral eyes. Distitarsus I lacking curve. Epigynum with plate; plate smoothly rounded at posterior margin (Fig. 368); copulatory openings inconspicuous, at posterior margin of plate. Copulatory tubes broad, with large spermathecal organ laterally; spermathecae elongate, extending anterolaterally, bulbous at tip (Fig. 367).



Map 63. Collection localities of *Pirata canadensis* (★) and *P. aspirans* (▲).



Figs. 366–373. Structures of *Pirata canadensis*. 366, body of female, dorsal view; 367, spermathecae, dorsal view; 368, epigynum, ventral view; 369, 370, 372, 373, palpus of male: 369, ventral view; 370, apical division, retrolateral view; 372, median apophysis, ventral view; 373, median apophysis, retrolateral view; 371, tarsus I of male. *e*, embolus; *ma*, median apophysis; *ple*, posterior lateral eye; *spt*, spermatheca; *steg*, subtegulum.

Comments. Individuals of *P. canadensis* are distinguished by the following characteristics: body small (largest measured carapace 1.90 mm long, 1.28 mm wide); carapace usually lacking dark margins; venter with dark coalescent bands; and distitarsus I of males curved. Synonymy between *P. canadensis* and *P. procurvus* (Boesenberg & Strand) of Asia has been proposed by Liu (1987), but comparison of specimens of these species confirms that *P. canadensis* can be distinguished by its smaller size, curved median apophysis having strongly hooked dorsal tooth, and triangular epigynal plate.

Range. British Columbia to Nova Scotia.

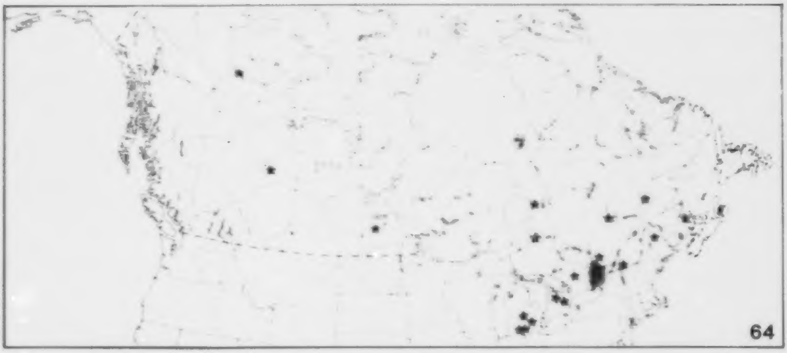
Biology. Adults of both sexes have been collected from June to August, and egg sacs have been found in July and August. All collections are from sphagnum bogs or black-spruce muskeg.

Pirata cantralli Wallace & Exline

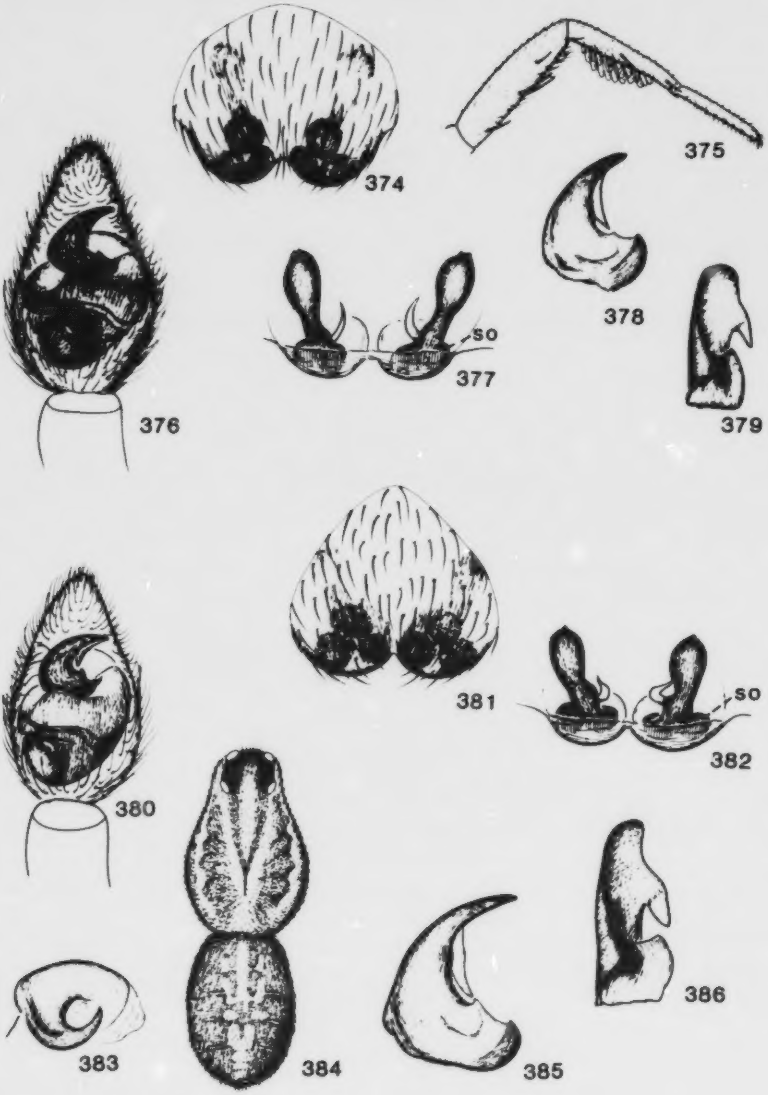
Figs. 374–379; Map 64

Pirata cantralli Wallace and Exline, 1978:46, figs. 81, 82, 88, 89.

Male. Total length 4.49 ± 0.31 mm; carapace 2.42 ± 0.11 mm long, 1.69 ± 0.08 mm wide (20 specimens measured). Carapace yellowish orange to reddish orange, with distinct V-shaped mark; marginal bands dark; submarginal bands pale. Anterior row of eyes shorter than middle row, somewhat procurved; anterior median eyes somewhat larger than anterior lateral eyes; anterior median eyes as close to each other as to anterior lateral eyes, or somewhat closer to the latter. Sternum yellow or orange, sometimes with pale band at midline. Chelicerae yellowish brown; retromargin with 3 teeth. Legs sometimes iridescent; basal segments brownish yellow; distal segments pale reddish brown; femur, patella, and tibia I devoid of long setae; tibia I and II conspicuously swollen; basitarsus I and II swollen at base, tapered strongly toward tip; basitarsus I with cluster of long curly setae on ventral surface (Fig. 375). Abdomen with scattered small black spots; heart mark yellow; venter yellowish brown, usually with 3–5 inconspicuous black bands. Median apophysis of palpus long, curved, extending beyond tip of alveolus, with stout tooth on dorsal surface (Figs. 378, 379).



Map 64. Collection localities of *Pirata cantralli*.



Figs. 374–386. Structures of *Pirata* spp. 374–379, *P. cantralli*. 374, epigynum, ventral view; 375, leg I of male; 376, 378, 379, palpus of male: 376, ventral view; 378, median apophysis, ventral view; 379, median apophysis, retrolateral view; 377, spermathecae, dorsal view. 380–386, *P. insularis*. 380, 383, 385, 386, palpus of male: 380, ventral view; 383, apical division, ventral view; 385, median apophysis, ventral view; 386, median apophysis, retrolateral view; 381, epigynum, ventral view; 382, spermathecae, dorsal view; 384, body of female, dorsal view. *so*, spermathecal organ.

Female. Total length 5.07 ± 0.73 mm; carapace 2.32 ± 0.17 mm long, 1.65 ± 0.16 mm wide (20 specimens measured). Color and structure essentially as in male; legs I and II not swollen, lacking specialized setae. Epigynum with plate; plate smoothly rounded at posterior margin (Fig. 374); copulatory openings inconspicuous, at posterior margin of plate. Copulatory tubes broad, with large spermathecal organ laterally; spermathecae elongate, extending anterolaterally, bulbous at tip (Fig. 377).

Comments. Individuals of *P. cantralli* are distinguished by the following characteristics: tibiae and distitarsi I and II of males swollen; distitarsus I of males with many long curly setae; and body rather large (distinctly larger than in *P. canadensis*). No characters are known by which to distinguish females of *P. cantralli* from those of *P. insularis*. Wallace and Exline (1978) indicate that *P. cantralli* shows a preference for emergent plants in mudflats, whereas *P. insularis* may show preference for wet sphagnum; this needs confirmation.

Range. Western Northwest Territories to New Brunswick, south to Michigan.

Biology. Adult males of *P. cantralli* were collected from May to August and adult females from June to August. Egg sacs were recorded in August. Specimens were collected in marshes.

Pirata insularis Emerton

Figs. 380–386; Map 65

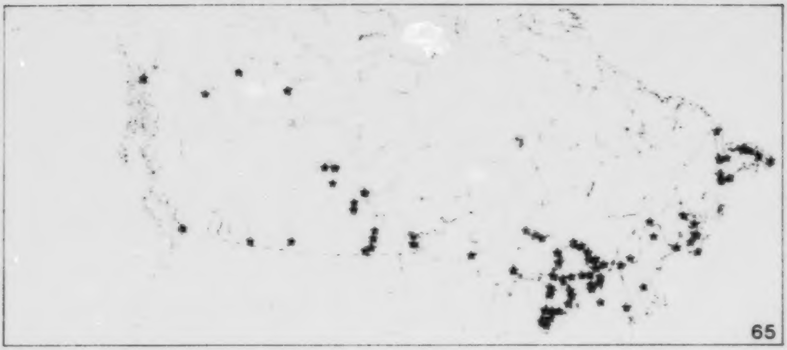
Pirata insularis Emerton, 1885:492, figs. 8, 8*a* (pl. 48); Chamberlin 1908:309, figs. 3, 6 (pl. 22); Kaston 1948:310, figs. 987, 988 (pl. 49), 1005 (pl. 50), 1011 (pl. 51); Wallace and Exline 1978:40, figs. 77–80, 83–86.

Pardosa bilobata Tullgren, 1901:22, fig. 12.

Pirata liber Montgomery, 1902:578, figs. 42, 43 (pl. 30).

Pirata sylvestris Emerton, 1909:209, figs. 8, 8*a* (pl. 6).

Male. Total length 4.45 ± 0.43 mm; carapace 2.39 ± 0.22 mm long, 1.64 ± 0.17 mm wide (20 specimens measured). Carapace yellowish orange, with distinct V-shaped mark; marginal band dark, narrow, usually present; submarginal bands pale, usually present. Anterior row of eyes shorter than middle row, somewhat procurved, approximately uniformly spaced; anterior median eyes somewhat larger than anterior lateral eyes. Sternum yellow, paler at midline, with dark submarginal spots. Chelicerae yellowish orange;



Map 65. Collection localities of *Pirata insularis*.

retromargin with 3 teeth. Legs yellowish orange; patella and tibia I sometimes darker, usually lacking dark rings. Abdomen black, with small scattered yellow spots; heart mark yellow; venter yellow, usually with median and 1–3 pairs of dark lateral bands. Median apophysis of palpus long, curved, extending beyond distal end of alveolus, with stout tooth on dorsal surface (Figs. 385, 386).

Female. Total length 5.18 ± 0.65 mm; carapace 2.56 ± 0.38 mm long, 1.84 ± 0.27 mm wide (20 specimens measured). Color and shape essentially as in male (Fig. 384). Carapace with marginal band dark, sometimes obscure or absent. Anterior median eyes sometimes equal in size to anterior lateral eyes. Legs somewhat darker distally than those of males; patella and tibia I not dark. Epigynum with plate; plate smoothly rounded at posterior margin (Fig. 381); copulatory openings inconspicuous, situated at posterior margin of plate. Copulatory tubes broad, with large spermathecal organ laterally; spermathecae elongate, extending anterolaterally, bulbous at tip (Fig. 382).

Comments. Individuals of *P. insularis* are distinguished by the following characteristics: tibiae and distitarsi I and II of males lacking swelling and curly setae; and body size rather large (distinctly larger than in *P. canadensis*). No characters are known by which to distinguish females of *P. insularis* from those of *P. cantralli*, though Wallace and Exline (1978) suggest a possible microhabitat difference (see comments on *P. cantralli*).

Range. Southern Alaska to Nova Scotia, south to Arizona and Florida.

Biology. Adult males have been collected from May to August and adult females from May to September, and egg sacs have been found from July to September. In the southern parts of its range, however, adults have been collected in nearly every month of the year. Most Canadian specimens are found in sphagnum bogs, with a few from marshes and the margins of lakes, ponds, and streams.

Pirata aspirans Chamberlin

Figs. 387–389; Map 63

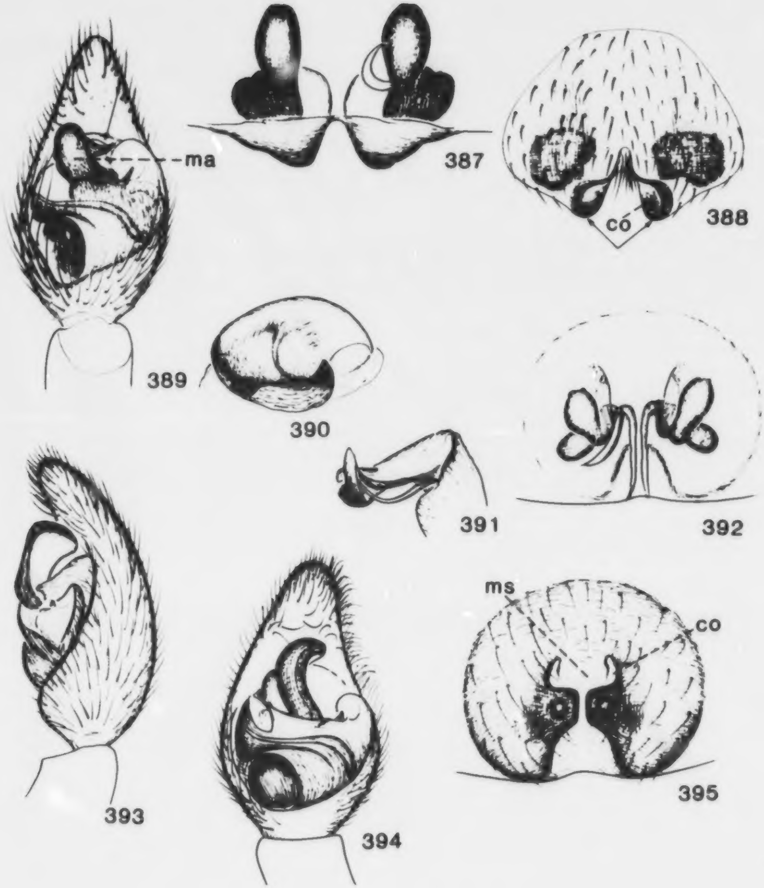
Pirata aspirans Chamberlin, 1904*b*:286; 1908:303, figs. 4, 5 (pl. 22); Wallace and Exline 1978:30, figs. 51–60.

Pirata arenicola Emerton, 1909:208, figs. 9, 9*a*–9*c* (pl. 6); Kaston 1948:311, figs. 989 (pl. 49), 1002 (pl. 50), 1012 (pl. 51).

Male. Total length 4.24 ± 0.33 mm; carapace 2.15 ± 0.12 mm long, 1.49 ± 0.11 mm wide (10 specimens measured). Carapace with V-shaped mark; margins usually dark; submarginal bands pale, distinct. Anterior row of eyes as long as or nearly as long as middle row, procurved; anterior median eyes larger than anterior lateral eyes and closer to the latter than to each other. Sternum orange. Chelicerae dark orange to black; retromargin with 2 or 3 teeth. Legs dark orange, with indistinct dark rings; tibiae and basitarsi darker than other segments. Abdomen dark brown to black; abdominal setae white, in paired small spots; heart mark paler than abdomen; venter yellow or dull orange, with indistinct black midstripe. Median apophysis extending somewhat beyond tip of alveolus, rounded distally, with process; process long, conical, at mid length on retrolateral side (Fig. 389).

Female. Total length 4.49 ± 0.80 mm; carapace 2.06 ± 0.20 mm long, 1.49 ± 0.17 mm wide (20 specimens measured). Coloration essentially as in male. Epigynum with plate; plate ovoid, triangular, or elongated in shape; epigynum with pair of pointed processes at posterior margin; copulatory openings distinct, located on mesal surfaces of posterior processes (Fig. 388). Copulatory tubes short, with round spermathecal organs laterally; spermathecae short, stout, oriented longitudinally (Fig. 387).

Comments. Specimens of *P. aspirans* can be distinguished from those of the other species in Canada by the following characteristics: carapace with dark margins and pale submarginal bands; tibiae and basitarsi dark; abdominal venter with dark midstripe; median apophysis short, rounded distally; median apophysis with long pointed process on retrolateral side; epigynum



Figs. 387–395. Genitalia of *Pirata* spp. 387–389, *P. aspirans*. 387, spermathecae, dorsal view; 388, epigynum, ventral view; 389, palpus of male, ventral view. 390–395, *P. giganteus*. 390, 391, 393, 394, palpus of male: 390, apical division, ventral view; 391, apical division, retrolateral view; 393, palpus, retrolateral view; 394, palpus, ventral view; 392, spermathecae, dorsal view; 395, epigynum, ventral view. *co*, copulatory openings; *ma*, median apophysis; *ms*, median septum.

with pointed posterior processes bearing distinct copulatory openings on mesal surfaces; and spermathecal organs round.

Range. Manitoba to Nova Scotia, south to Georgia.

Biology. Adult males have been collected from May to August, adult females from April to September, and egg sacs from June to August. Swamps, bogs, and moist meadows are the usual habitats.

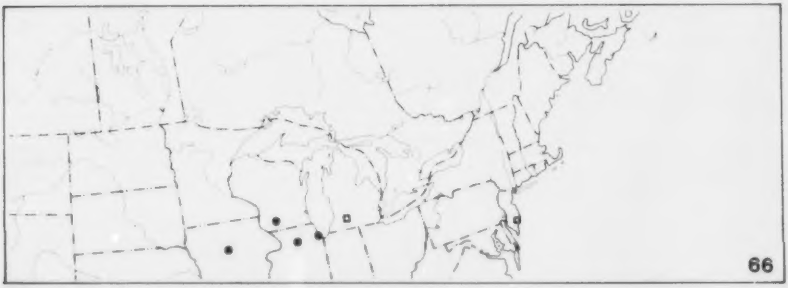
Pirata giganteus Gertsch

Figs. 390–395; Map 66

Pirata giganteus Gertsch, 1934*a*:12; Wallace and Exline 1978:89, figs. 187–191; Dondale and Redner 1981:107, figs. 5, 6.

Male. Total length approximately 4.60 mm; carapace 2.68 mm long, 1.80 mm wide (1 specimen measured). Carapace with pale margins and submarginal bands, and with V-shaped mark. Anterior row of eyes shorter than middle row, somewhat procurved; anterior median eyes larger than anterior lateral eyes and closer to the latter than to each other. Sternum orange to black, paler at midline. Chelicerae brownish orange; retromargin with 3 teeth. Legs yellowish orange, with faint dark rings. Abdomen dark gray; heart mark indistinct, yellow; venter gray, with 3 broad indistinct dark bands. Median apophysis long, curved, pointed (ventral view, Fig. 394), extending beyond tip of alveolus, broad and concave dorsally (retrolateral view, Fig. 393).

Female. Total length 5.60–7.36 mm; carapace 3.20–3.60 mm long, 2.24–2.56 mm wide (2 specimens measured). Color and structure essentially as in male, but tibia I lacking distal pair of ventral macrosetae. Epigynum with plate; plate divided into paired shiny convex sclerites by median septum; median septum depressed, slender at middle, expanded laterally at both ends; copulatory openings situated at sides of median septum anteriorly (Fig. 395). Copulatory tubes short, extending first posteriorly then anteriorly, with spermathecal organ; spermathecae bulbous, with slender base (Fig. 392).



Map 66. Collection localities of *Pirata giganteus* (●) and *P. seminola* (□).

Comments. Specimens of *P. giganteus* are distinguished from other species by the following characteristics: body rather large; median apophysis long, curved, and pointed in ventral view, broad and concave in retrolateral view; epigynal plates paired; median septum depressed, slender at middle; and copulatory openings, copulatory tubes, and spermathecae situated anteriorly.

Range. Iowa to Wisconsin and Illinois.

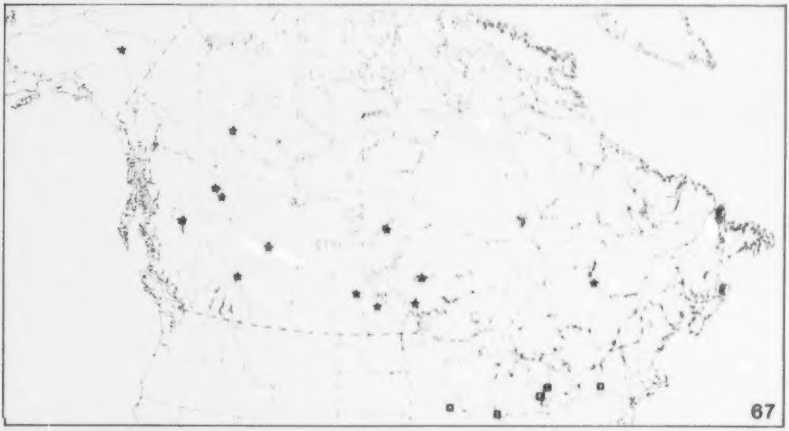
Biology. The available specimens were collected in June. No habitat data are recorded.

Pirata bryantae Kurata

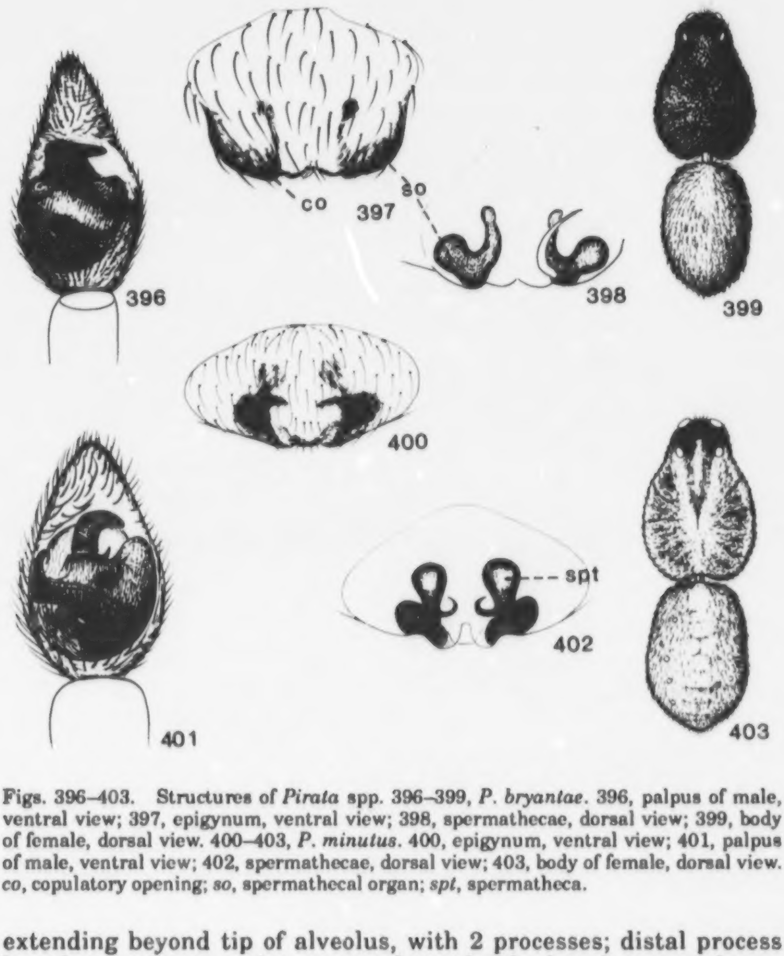
Figs. 396–399; Map 67

Pirata bryantae Kurata, 1944:3, figs. 1–4 (pl. 2); Wallace and Exline 1978:85, figs. 175–180.

Male. Total length 3.76–4.14 mm; carapace 1.96–2.12 mm long, 1.19–1.40 mm wide (3 specimens measured). Carapace black, with no pale bands or V-shaped mark. Anterior row of eyes shorter than middle row, procurved; anterior median eyes larger than anterior lateral eyes and closer to each other than to the latter. Sternum black. Chelicerae black; retromargin with 2 or 3 teeth. Legs I and II black except tarsi; tarsi yellowish; legs III and IV yellowish. Abdomen black; venter black. Median apophysis rather prominent,



Map 67. Collection localities of *Pirata bryantae* (★) and *P. montanoides* (□).



Figs. 396–403. Structures of *Pirata* spp. 396–399, *P. bryantae*. 396, palpus of male, ventral view; 397, epigynum, ventral view; 398, spermathecae, dorsal view; 399, body of female, dorsal view. 400–403, *P. minutus*. 400, epigynum, ventral view; 401, palpus of male, ventral view; 402, spermathecae, dorsal view; 403, body of female, dorsal view. *co*, copulatory opening; *so*, spermathecal organ; *spt*, spermatheca.

extending beyond tip of alveolus, with 2 processes; distal process broad, tapering to point on retrolateral side; basal process large, blunt (Fig. 396).

Female. Total length 4.42 ± 0.35 mm; carapace 2.10 ± 0.06 mm long, 1.41 ± 0.08 mm wide (10 specimens measured). Color and structure essentially as in male (Fig. 399). Anterior eyes equally spaced or anterior median eyes closer to anterior lateral eyes than to each other. Legs I and II more yellowish than in male. Epigynum with plate; plate smoothly rounded at posterior margin; copulatory openings small, inconspicuous, situated in posterior margin of plate near midline (Fig. 397). Copulatory tubes short, with bulbous spermathecal organs; spermathecae small, slender (Fig. 398).

Comments. Specimens of *P. bryantae* are distinguished from the other species of *Pirata* in Canada by the following characteristics: body and front legs black; carapace lacking V-shaped mark; median apophysis short, broad, and curved and having blunt basal process; epigynal plate smoothly rounded; and spermathecal organs bulbous.

Range. Alaska to Newfoundland.

Biology. Adults have been collected in June and July. All of the specimens were collected in sphagnum bogs or wet black-spruce forests.

Pirata minutus Emerton

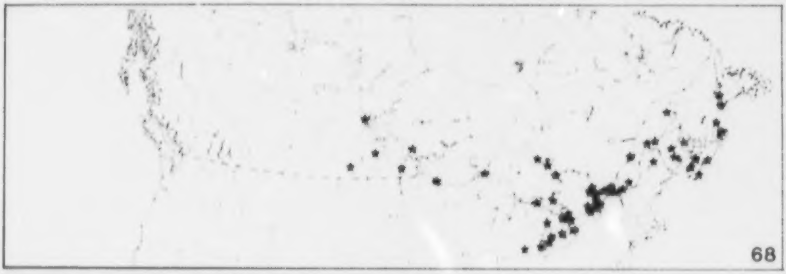
Figs. 400–403; Map 68

Pirata minutus Emerton, 1885:493, figs. 10, 10*a*–10*c* (pl. 48); Chamberlin 1908:301, figs. 9 (pl. 21), 7 (pl. 22); Kaston 1948:307, figs. 1001 (pl. 50), 1008 (pl. 51); Wallace and Exline 1978:96, figs. 208–216.

Pirata exigua Banks, 1892:72, fig. 48 (pl. 1).

Pirata humicolus Montgomery, 1902:575, figs. 40, 41 (pl. 30).

Male. Total length 2.86 ± 0.31 mm; carapace 1.56 ± 0.27 mm long, 0.97 ± 0.18 mm wide (20 specimens measured). Carapace dark orange, suffused and reticulated with black, usually with V-shaped mark and without pale margins or submarginal bands. Anterior row of eyes shorter than middle row and procurved; anterior median eyes larger than anterior lateral eyes and usually closer to the latter than to each other. Sternum dark orange, suffused with black, with pale midstripe; setae numerous, stout, curved, black. Chelicerae dark orange to black; retromargin with 2 or 3 teeth. Legs orange; femur I (and often II) black, iridescent. Abdomen dorsally gray, brown, or black; setae white, in several paired patches; venter gray to black. Median apophysis extending somewhat beyond tip of alveolus, elongate and slender, with 2 processes; distal process small, hooded; basal process distinct, tooth-like (Fig. 401).



Map 68. Collection localities of *Pirata minutus*.

Female. Total length 3.29 ± 0.45 mm; carapace 1.60 ± 0.16 mm long, 1.12 ± 0.14 mm wide (20 specimens measured). Color and structure as in male but body and legs paler (Fig. 403). Sternum sometimes orange speckled with black. Legs with tibia I (and often II) as dark as or darker than femur I; femora I and II sometimes black at tips only. Anterior row of eyes often uniform in size and spacing. Epigynum with plate; plate bearing small paired pointed processes at posterior margin; copulatory openings inconspicuous, located on mesal margins of posterior processes of plate (Fig. 400). Copulatory tubes short, broad, with spermathecal organs at sides; spermathecal organs rounded, visible through integument of plate as roughly crescent-shaped; spermathecae short, bulbous (Fig. 402).

Comments. Specimens of *P. minutus* are distinguished from those of the other species of *Pirata* in Canada by the following characteristics: carapace and leg femora dark; body small; sternum with pale mid stripe and stout curved black setae; median apophysis elongate and slender, extending somewhat beyond tip of alveolus; median apophysis with distinct tooth-like basal process; epigynal plate with small posterior processes at posterior margin; copulatory openings on mesal surfaces of plate processes; spermathecal organs rounded, visible through integument of plate as roughly crescent-shaped.

Range. Saskatchewan to Newfoundland, south to Utah and North Carolina.

Biology. Adults of both sexes have been collected from May to September, and egg sacs in July and August. Common habitats are meadows, hayfields, marshes, swamps, and bogs. The spiders found in south-central Ontario have an annual life history (Dondale 1977).

Pirata seminola Gertsch & Wallace

Figs. 404–407; Map 66

Pirata seminola Gertsch and Wallace, 1935:7, figs. 33, 35; Wallace and Exline 1978:22, figs. 32–43.

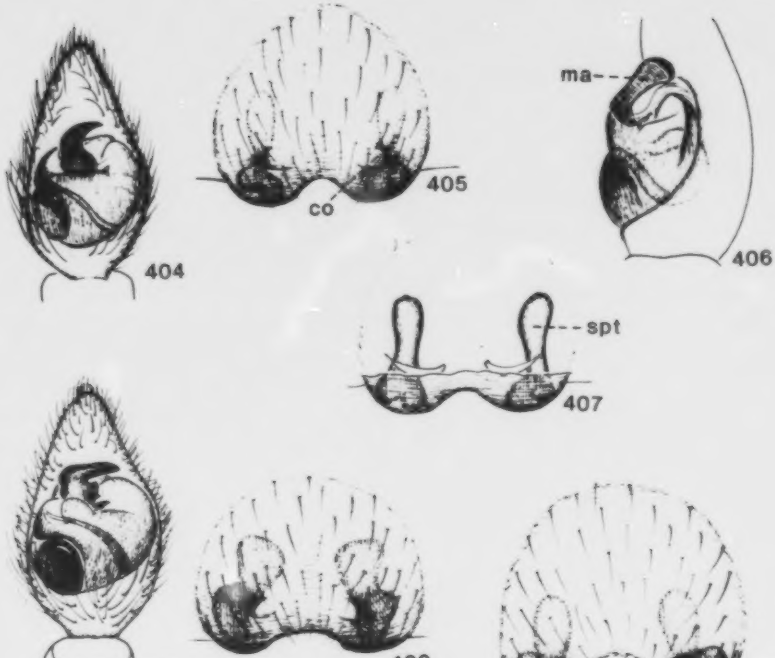
Male. Total length 2.69–3.37 mm; carapace 1.44–1.87 mm long, 0.99–1.32 mm wide (6 specimens measured). Carapace usually with dark margins, pale submarginal bands, and V-shaped mark. Anterior row of eyes nearly as long as middle row, straight or procurved; anterior median eyes larger than anterior lateral eyes and somewhat closer to the latter than to each other. Sternum yellow. Chelicerae brownish yellow; retromargin with 3 teeth. Legs dark greenish gray, with long ventral setae; femora usually with dark rings. Abdomen dark gray, with minute darker spots and streaks; venter pale or somewhat pigmented. Median apophysis long, sickle-shaped, extending beyond tip of alveolus, shallowly concave on dorsal surface (Figs. 404, 406).

Female. Total length 3.70 ± 0.34 mm; carapace 1.80 ± 0.15 mm long, 1.29 ± 0.11 mm wide (9 specimens measured). Color as in male but generally paler; anterior median and anterior lateral eyes approximately equal in size. Legs conspicuously hairy ventrally, as in male. Epigynum with convex plate; copulatory openings inconspicuous, situated on paired prominences at posterior margin of plate (Fig. 405). Copulatory tubes dark, triangular; spermathecae long, bulbous (Fig. 407).

Comments. Specimens of *P. seminola* are distinguished from those of the other species of *Pirata* in Canada by the following characteristics: legs hairy; carapace with pale submarginal bands; median apophysis long, sickle-shaped, with shallow dorsal concavity; copulatory openings situated on paired posterior prominences; and spermathecae long and bulbous.

Range. Texas to Florida, north to Michigan and New Jersey.

Biology. Adults have been collected from April to August. The main habitats are marshes and the margins of ponds and lakes.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Figs. 404–413. Genitalia of *Pirata* spp. 404–407, *P. seminola.* 404, 406, palpus of male: 404, ventral view; 406, retrolateral view; 405, epigynum, ventral view; 407, spermathecae, dorsal view. 408–413, *P. sedentarius.* 408, palpus of male, ventral view; 409, 410, 412, epigynums, ventral view; 411, 413, spermathecae, dorsal view. *co*, copulatory opening; *ma*, median apophysis; *spt*, spermatheca.

Pirata sedentarius Montgomery

Figs. 408–413; Map 69

Pirata sedentarius Montgomery, 1904:312, figs. 28, 29 (pl. 19); Wallace and Exline 1978:72, figs. 143, 144, 146–162.

Pirata wacondana Scheffer, 1904:260, fig. 7 (pl. 17).

Pirata californica Banks, 1904*a*:356, fig. 13 (pl. 39).

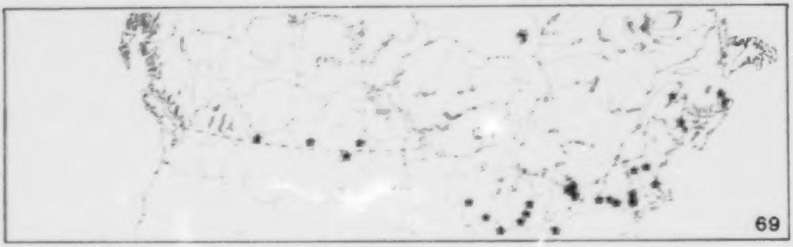
Pirata maculatus Emerton, 1909:209, figs. 10, 10*a*, 10*b* (pl. 6); Kaston 1948:311, figs. 990, 991 (pl. 49), 1007 (pl. 50), 1013 (pl. 51).

Male. Total length 4.98 ± 0.66 mm; carapace 2.64 ± 0.39 mm long, 1.82 ± 0.19 mm wide (19 specimens measured). Carapace with dark V-shaped mark; margins usually pale, broad. Anterior row of eyes nearly as long as middle row, straight or somewhat procurved; anterior median eyes larger than anterior lateral eyes; anterior median eyes either uniformly spaced or closer to anterior lateral eyes than to each other. Sternum gray, with broad pale midstripe. Chelicerae brownish orange; retromargin with 3 teeth. Legs brownish orange, with indistinct dark rings; undersides of legs with many long erect setae. Abdomen gray to black; heart mark large, yellowish; dorsum with white setae in paired small spots; venter pale gray, sometimes with indistinct dark longitudinal bands. Median apophysis extending to or somewhat beyond distal margin of alveolus; median apophysis nearly truncate distally, with long distal process and with blunt basal process (Fig. 408).

Female. Total length 5.65 ± 0.70 mm; carapace 2.73 ± 0.28 mm long, 1.96 ± 0.22 mm wide (20 specimens measured). Color as in male; carapace sometimes with dark spots along margins and pale spots in series along mid dorsal line. Epigynum bearing pair of indistinct rounded prominences at posterior margin; copulatory openings situated posteriorly near midline of epigynal plate (Figs. 409, 410, 412). Copulatory tubes short, stout, straight; spermathecal organ lateral, moderately large; spermathecae short, stout, sometimes somewhat angular on mesal margin (Figs. 411, 413).

Comments. Specimens of *P. sedentarius* are distinguished from those of the other species of *Pirata* in Canada by the following characteristics: carapace with pale margins and submargins; sternum with pale midstripe; median apophysis short, with long distal process and blunt basal process; and epigynal plate with rounded processes at posterior margin.

Range. Southern Alberta to Nova Scotia, south to Mexico and the West Indies.



Map 69. Collection localities of *Pirata sedentarius*.

Biology. Mature males of *P. sedentarius* have been collected from May to August and mature females from May to November. Egg sacs were recorded from June to August. The recorded habitats include shores of lakes, ponds, and rivers, and moist deciduous and coniferous forests. Wallace and Exline (1978) report a collection from a salt marsh in Massachusetts.

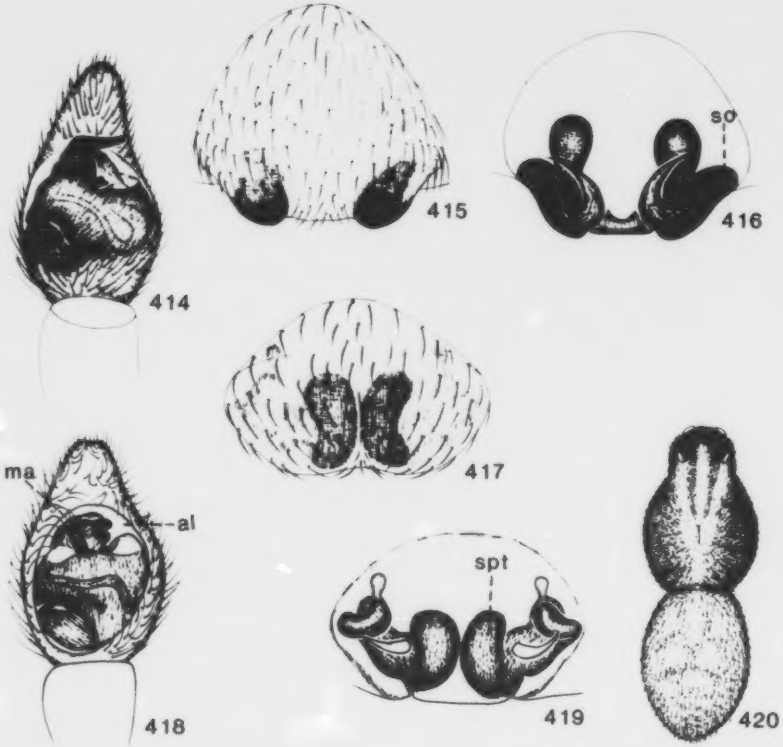
Pirata montanoides Banks

Figs. 414–416; Map 67

Pirata montanoides Banks, 1892:71, fig. 46 (pl. 1); Wallace and Exline 1978:102, figs. 217–222.

Male. Total length approximately 3 mm; carapace 1.60 mm long, 1.20 mm wide (1 specimen measured). Carapace with slender V-shaped mark; margins faintly pigmented; marginal bands broad, pale. Anterior row of eyes shorter than middle row, somewhat procurved, uniformly spaced; anterior median eyes somewhat larger than anterior lateral eyes. Sternum pale. Chelicerae pale; retromargin with 2 teeth. Legs yellowish orange, with few faint rings, if any. Abdomen with dark gray reticulations on pale background; venter pale. Median apophysis extending beyond tip of alveolus; median apophysis approximately sickle-shaped, somewhat angular (Fig. 414).

Female. Total length approximately 3.75 mm; carapace 1.75–2.00 mm long, 1.27–1.50 mm wide (3 specimens measured). Color essentially as in male but leg femora with greenish iridescence. Epigynum with rounded processes at posterior margin (Fig. 415); copulatory openings inconspicuous. Spermathecae large, elliptical (Fig. 416).



Figs. 414–420. Structures of *Pirata* spp. 414–416, *P. montanoides*. 414, palpus of male, ventral view; 415, epigynum, ventral view; 416, spermathecae, dorsal view. 417–420, *P. montanus*. 417, epigynum, ventral view; 418, palpus of male, ventral view; 419, spermathecae, dorsal view; 420, body of female, dorsal view. *al*, alveolus; *ma*, median apophysis; *so*, spermathecal organ; *spt*, spermatheca.

Comments. Specimens of *P. montanoides* are distinguished from those of the other species by the following characteristics: carapace with pale lateral areas; chelicerae with 2 retromarginal teeth; median apophysis long and sickle-shaped; and epigynal plate with rounded processes.

Range. Northeast Iowa east to northern New York.

Biology. Mature males of *P. montanoides* have been collected in June and mature females in June and August. An egg sac was recorded in June. Habitat is not recorded.

Pirata montanus Emerton

Figs. 417–420; Map 70

Pirata montanus Emerton, 1885:493, fig. 9 (pl. 48); Chamberlin 1908:306, fig. 9 (pl. 10), 9 (pl. 22); Kaston 1948:308, figs. 983 (pl. 49), 1004 (pl. 50), 1009 (pl. 51); Wallace and Exline 1978:103, figs. 223–232.

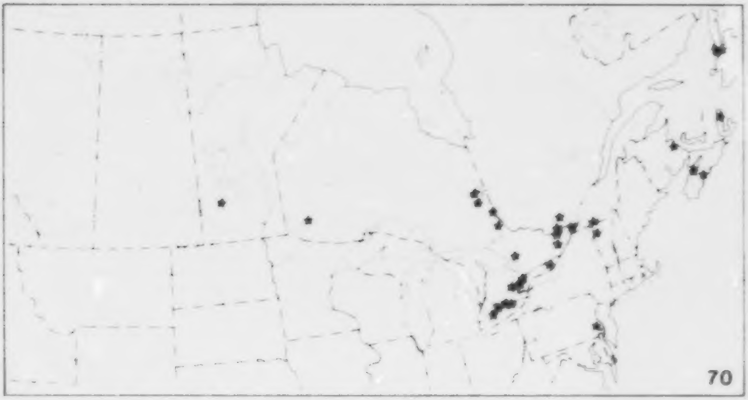
Pirata elegans Stone, 1890:429, figs. 5, 5*a* (pl. 15).

Pirata agilis Banks, 1892:72, fig. 47 (pl. 1).

Pirata nigromaculatus Montgomery, 1902:579, figs. 44, 45 (pl. 30).

Male. Total length 4.65 ± 0.38 mm; carapace 2.37 ± 0.15 mm long, 1.60 ± 0.13 mm wide (20 specimens measured). Carapace with dark V-shaped mark; margins and submargins dark. Anterior row of eyes shorter than middle row, procurved; anterior median eyes equal in size to anterior lateral eyes and usually closer to the latter than to each other. Sternum dark, with pale midstripe, covered with setae; setae black, curved, uniform in length. Chelicerae dark reddish brown to black; retromargin with 3 teeth. Legs orange; femora I and II black except at tips; femora III and IV with indistinct dark rings. Abdomen dark brown, gray, or reddish, reticulated with black, with lateral stripes; dorsum with white setae in paired small spots; venter grayish brown, sometimes with 3 indistinct dark bands. Median apophysis thin, flat, not extending to distal margin of alveolus, inclined dorsally at distal end, with 2 processes; distal process beak-like; basal process pointed (Fig. 418).

Female. Total length 5.14 ± 0.76 mm; carapace 2.37 ± 0.23 mm long, 1.64 ± 0.16 mm wide (20 specimens measured). Color essentially as in male but paler. Submarginal bands on carapace sometimes represented by series of pale spots (Fig. 420). Legs with femora I–IV orange with dark rings; tibiae I–IV dark except for pale ring at middle. Abdominal dorsum often with series of pale spots at midline. Epigynum with plate smoothly rounded at posterior margin; copulatory openings lateral, bordered by curved lateral ridges, located at same level as bases of spermathecae (Fig. 417). Copulatory tubes inconspicuous; spermathecae moderately large, kidney-shaped, touching; spermathecal organs convoluted (Fig. 419).



Map 70. Collection localities of *Pirata montanus*.

Comments. Specimens of *P. montanus* are distinguished from those of the other species in Canada by the following characteristics: carapace with dark margins and submargins; sternum dark with pale midstripe and covering of dark curved setae of uniform length; femora I and II of male dark; median apophysis short and inclined dorsally, bearing beak-like distal process and pointed basal process; epigynal plate smoothly rounded; and spermathecae kidney-shaped and touching.

Range. Manitoba to Newfoundland, south to Tennessee and North Carolina.

Biology. Males are mature from May to July and females from May to November. Egg sacs have been observed from June to November. The usual habitats are grassy drainage ditches, moist deciduous and coniferous woods, and sphagnum bogs.

Pirata piraticus (Clerck)

Figs. 421–424, 426, 427; Map 71

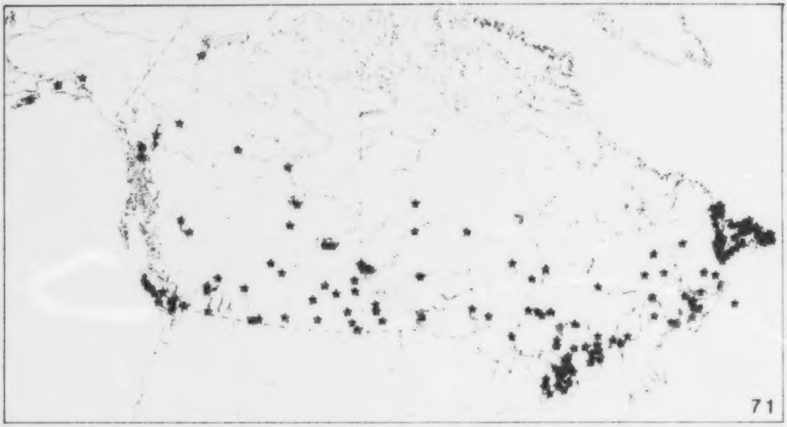
Araneus piraticus Clerck, 1758:102, fig. 4 (pl. 5).

Pirata prodigiosa Keyserling, 1877:669, fig. 44 (pl. 8); Chamberlin 1908:313.

Lycosa febriculosa Becker, 1881:45, figs. 2, 2*a* (pl. 2).

Pirata febriculosa: Chamberlin 1908:311, figs. 1, 2 (pl. 22).

Pirata piratica: Kaston 1948:309, figs. 1003 (pl. 50), 1010 (pl. 51).

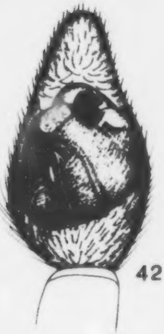


Map 71. Collection localities of *Pirata piraticus*.

Pirata piraticus: Palmgren, 1939:70, figs. 104, 109, 115; Holm, 1947:10, figs. 4 (pl. 9), 7, 8 (pl. 1); Wallace and Exline, 1978:66, figs. 134–139.

Male. Total length 5.56 ± 0.77 mm; carapace 2.84 ± 0.41 mm long, 2.13 ± 0.26 mm wide (20 specimens measured). Carapace dark orange or reddish brown, with V-shaped mark; margins and submarginal bands pale. Anterior row of eyes nearly as long as middle row, somewhat procurved; anterior median eyes larger than anterior lateral eyes and either equally spaced or closer to the latter than to each other. Sternum yellow or orange. Chelicerae dark orange; retromargin with 3 teeth. Legs dark orange, darkening to reddish distally, without dark rings. Abdomen orange brown to black, with lateral bands and paired spots of white setae; heart mark dull yellow; venter dull yellow, sometimes with indistinct longitudinal bands. Median apophysis short, not reaching tip of alveolus, rounded apically, drawn out to beak-like point on retrolateral side; basal process blunt (Figs. 421, 426).

Female. Total length 6.06 ± 0.73 mm; carapace 2.86 ± 0.22 mm long, 2.13 ± 0.20 mm wide (20 specimens measured). Color essentially as in male (Fig. 424). Legs with tibia I having 2 (not 3) pairs of ventral macrosetae. Epigynum with plate rounded posteriorly; copulatory openings located posteriorly and bordered by curved ridges (Figs. 423, 427). Copulatory tubes short, broad; spermathecal organs lateral, large; spermathecae short, stout, usually slender at base, usually barely longer than spermathecal organs (Fig. 422).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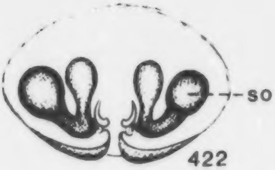
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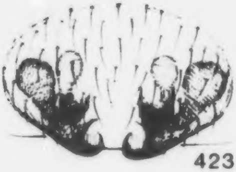
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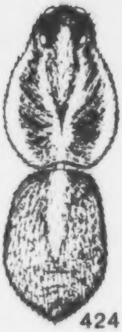
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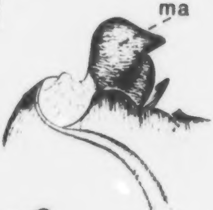

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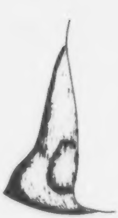
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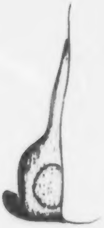
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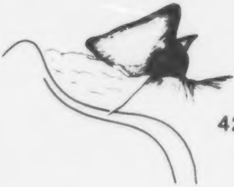
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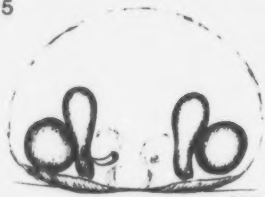
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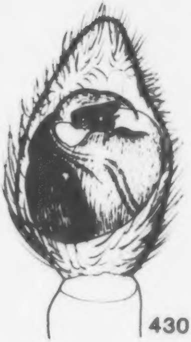
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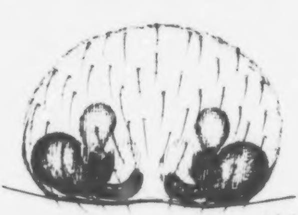
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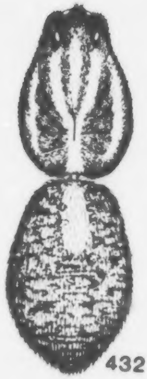
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Comments. Specimens of *P. piraticus* are distinguished from the other species of *Pirata* found in Canada by the following characteristics: carapace with pale margin and submargins; legs lacking dark rings; median apophysis short, with rounded apical margin; median apophysis with beak-like process on retrolateral side and blunt basal process; copulatory openings bordered by curved ridges; and spermathecae short, usually with slender bases.

Range. Alaska to Newfoundland, south to California and West Virginia; Europe, Asia.

Biology. Adults have been collected from June to September and egg sacs from mid June to mid September. The usual habitats are marshes (both fresh and salt), swamps, bogs, and the moist shores of lakes and streams. Nørgaard (1951) investigated the temperature and moisture requirements of *P. piraticus* in Denmark. The spider prefers to remain among the stems of wet sphagnum, where summer temperatures range from 18° to 24°C. Females with egg sacs, however, spend sunny days on the surface of the sphagnum, where temperatures range from 26° to 30°C. The spider has also been studied in salt marshes in Europe (Schaefer 1974, 1977).

Pirata zelotes Wallace & Exline

Figs. 425, 428–432; Map 72

Pirata zelotes Wallace and Exline, 1978:70, figs. 140–142, 145.

Male. Total length 5.75–6.33 mm; carapace 2.95–3.49 mm long, 2.03–2.36 mm wide (5 specimens measured). Carapace dark orange or reddish brown, with V-shaped mark; margins black; submarginal bands pale (Fig. 432). Anterior row of eyes nearly as long as middle row, somewhat procurved; anterior median eyes equal to or larger than anterior lateral eyes, usually somewhat closer to the latter than to each other. Sternum yellowish orange. Chelicerae brownish orange; retromargin with 3 teeth (rarely 2 on one chelicera or the other). Legs yellowish brown, with faint dark rings; distal areas darkening to reddish. Abdomen yellowish to gray, reticulated with dark brown or black, with lateral bands and paired spots of white

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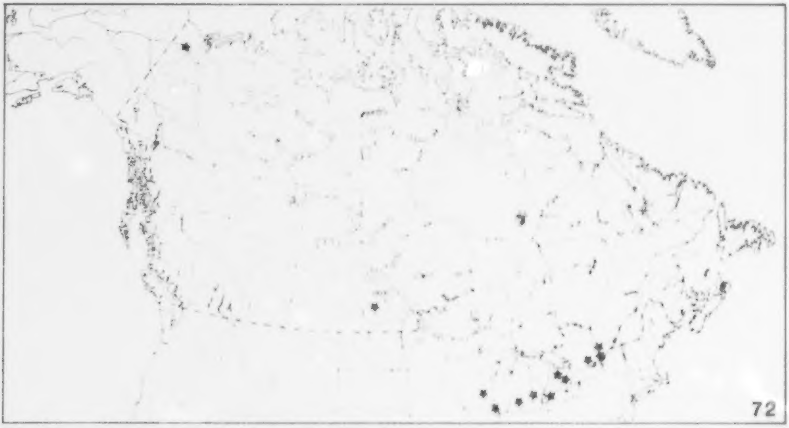
Figs. 421–432. Structures of *Pirata* spp. 421–424, 426, 427, *P. piraticus*. 421, 426, palpus of male: 421, ventral view; 426, median apophysis, ventral view; 422, spermathecae, dorsal view; 423, 427, epigynum: 423, ventral view. 427, lateral view; 424, body of female, dorsal view. 425, 428–432, *P. zelotes*. 425, 430, palpus of male: 425, median apophysis, ventral view; 430, palpus, ventral view; 428, 431, epigynum: 428, lateral view; 431, ventral view; 429, spermathecae, dorsal view; 432, body of female, dorsal view. *ma*, median apophysis; *so*, spermathecal organ.



Map 72. Collection localities of *Pirata zelotes*.

setae; venter yellow to dark gray. Median apophysis short (not reaching distal margin of alveolus), truncated apically; basal process thin, pointed (Figs. 425, 430).

Female. Total length 7.20 ± 0.67 mm; carapace 3.47 ± 0.41 mm long, 2.53 ± 0.32 mm wide (13 specimens measured). Color essentially as in male (Fig. 432); tibia I with 2 rather than 3 pairs of ventral macrosetae. Epigynum with plate rounded posteriorly; copulatory openings located posteriorly and bordered by curved ridges (Figs. 428, 431). Copulatory tubes short, broad; spermathecal organs lateral, large; spermathecae stout, usually broad at base, and usually distinctly longer than spermathecal organs (Fig. 429).

Comments. Specimens of *P. zelotes* are distinguished from those of the other species of *Pirata* in Canada by the following characteristics: carapace with dark margins and pale submarginal bands; legs with faint dark rings; median apophysis short, with truncate apical margin and thin pointed basal process; copulatory openings bordered with curved ridges; and spermathecae long and broad.

Range. Yukon Territory to Massachusetts, south to Illinois.

Biology. Adults of *P. zelotes* have been collected from late May to September and egg sacs in June and July. Collections are from swamps, marshes, and bogs.

Genus *Melocosa* Gertsch

Spiders of the genus *Melocosa* are medium sized, dark, and hairy. They commonly inhabit talus slopes above the timberline and can be exposed for capture by turning over small stones. The presence of molt skins in the vicinity may be a clue to the presence of one of these fierce, solitary animals. Aside from their unusual habitat, they exhibit certain strange anatomical characters, not least of which are the low, broad carapace and short, broad quadrangle formed by the four posterior eyes (Fig. 433). It was these characters that caused the genus *Melocosa* to be classified initially in the family Pisauridae. The male genitalia, however, show the spiders to be lycosids.

Description. Total length 11.4–17.1 mm. Carapace dark, hairy, low, broad, somewhat convex dorsally between dorsal groove and middle row of eyes, nearly vertical in front. Anterior row of eyes straight or somewhat procurved, nearly as long as middle row; anterior median eyes smaller than or equal to anterior lateral eyes and somewhat closer to the latter than to each other; middle and posterior rows forming short broad quadrangle (Fig. 433). Chelicerae long, stout, dark, hairy; retromargin with 3 teeth. Sternum dark, hairy. Legs dark, hairy; scopulae dense; femur I with 3 dorsal macrosetae, 3 prolaterals, 2 or 3 retrolaterals; tibia I with 2 dorsal macrosetae, 2 or 3 prolaterals, 2 retrolaterals, 3 pairs of ventrals; basitarsus I with no dorsal macrosetae (rarely 1), 3 prolaterals, 3 retrolaterals, 3 pairs of ventrals, and (in males) an unpaired ventral at tip; trochanters with shallow notch ventrally at tip. Abdomen ovoid, uniformly gray or reddish brown. Terminal apophysis lobe-like; embolus long, curved, with tip resting on tegulum; tegulum modified, functioning as conductor; median apophysis rudimentary (Figs. 435, 436). Epigynum with broad tongue-shaped median septum (Fig. 434); spermathecae rather small, ovoid (Fig. 437).

Comments. The single described member of the genus *Melocosa* differs from members of other lycosid genera by the following characteristics: middle and posterior rows of eyes forming short broad quadrangle; carapace low and broad; terminal apophysis lobe-like; median apophysis rudimentary; and median septum broad and tongue-shaped.

Melocosa fumosa (Emerton)

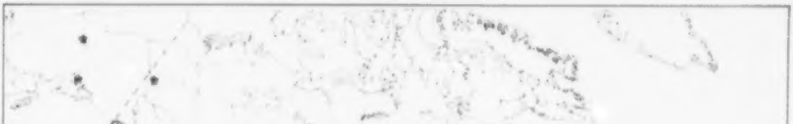
Figs. 433–437; Map 73

Lycosa fumosa Emerton, 1894:421, fig. 1 (pl. 3); Chamberlin 1908:272, figs. 2, 3 (pl. 19).

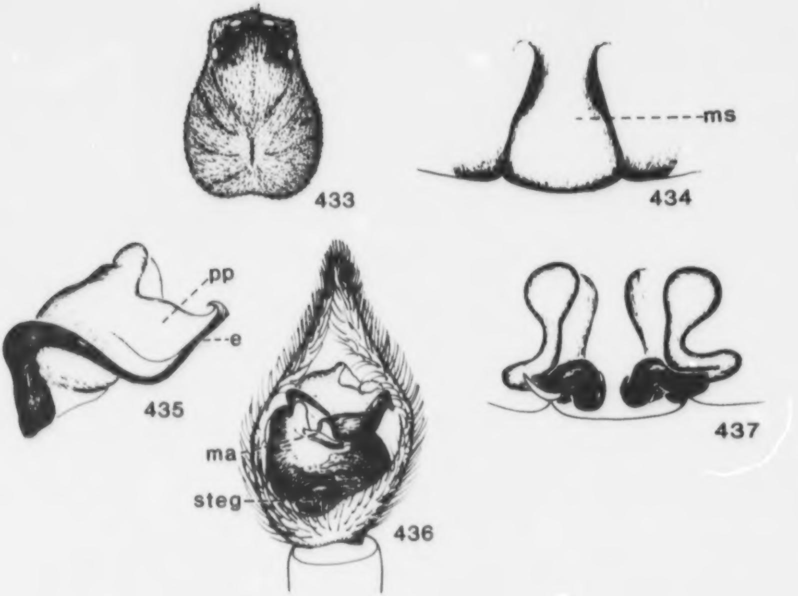
Melocosa fumosa: Gertsch 1937:6, fig. 5; Leech 1969:890, figs. 1–5.

Male. Total length 11.40–14.25 mm; carapace 5.98–6.95 mm long, 4.88–5.70 mm wide (7 specimens measured). Carapace dark reddish brown, with alternating light and dark streaks radiating from dorsal groove area; pale longitudinal bands absent. Chelicerae dark reddish brown. Femora sometimes with broad irregular darker rings. Abdomen dark gray, sometimes with faint heart mark; venter reddish brown. Cymbium covered dorsally with curved amber setae; tip of cymbium with cluster of short macrosetae; palea large, prominent; terminal apophysis with several lobes; embolus long, curved, with terminal hook; pars pendula extensive, hyaline (Fig. 435); median apophysis minute, cushion-like (Fig. 436); tegulum with minute distal lobe, with sclerotized hook, and with broad hyaline process underlying embolus.

Female. Total length 15.58–17.10 mm; carapace 6.65–7.80 mm long, 5.46–6.78 mm wide (5 specimens measured). Color essentially as in male (Fig. 433). Epigynum with rectangular plate; atrium inconspicuous; median septum broad, tongue-shaped, somewhat convex, hairy; septal margins more heavily sclerotized than middle (Fig. 434); copulatory openings inconspicuous, at sides of median septum near posterior end. Copulatory tubes thick at base, then



Map 73. Collection localities of *Melocosa fumosa* (□), *Arctosa raptor* (★), and *A. perita* (●).



Figs. 433–437. Structures of *Melocosa fumosa*. 433, carapace of female, dorsal view; 434, epigynum, ventral view; 435, 436, palpus of male: 435, apical division, ventral view; 436, palpus, ventral view; 437, spermathecae, dorsal view. *e*, embolus; *ma*, median apophysis; *ms*, median septum; *pp*, pars pendula; *steg*, subtegulum.

slender and curved; spermathecae ovoid, with several minute nodules (Fig. 437).

Comments. Specimens of *M. fumosa* are distinguished by the following characteristics: body large, dark, and hairy; quadrangle of eyes (formed by middle and posterior rows) short and broad; terminal apophysis lobe-like; median apophysis minute; embolus with broad hyaline pars pendula; and median septum tongue-shaped.

Range. Alaska to Montana.

Biology. Most specimens were collected at high elevations in the Rocky Mountains, many in talus at elevations above 2300 m. Adults were taken from June to August. Leech (1969) observed a mating pair in June. Two males were found on snow in early August.

Genus *Arctosa* C.L. Koch

Wolf spiders of the genus *Arctosa* are medium sized. They are moderately swift runners and possess relatively keen eyesight. Most dwell in sandy places such as seashores or the banks of rivers and lakes, although some occupy heath or lichen habitats in open forests or in arctic or alpine tundra. The usual body colors are gray, off-white, and tawny brown, in keeping with their habitats. Females may remain with their eggs in silk-lined burrows during daylight hours; males and juveniles also appear to be nocturnal. Two European members of the genus have shown the ability to "home" when carried some distance away on a nearby body of water (Papi and Tongiorgi 1963; Tongiorgi 1970).

Description. Total length 4.5–16.0 mm. Carapace broad, rather low, approximately uniform in height between dorsal groove and posterior row of eyes; carapace usually glabrous or nearly so, yellow, off-white, or mottled with gray and tawny brown. Anterior row of eyes straight, somewhat procurved, or somewhat recurved, longer than, shorter than, or equal in length to middle row. Chelicerae with 2 or 3 promarginal and 3 retromarginal teeth. Legs usually robust, pale, with dark rings; scopulae rather sparse; femur I with 2 or 3 dorsal macrosetae, 1 or 2 prolaterals; tibia I with 1 dorsal macroseta or none, 2 prolaterals, 0–2 retrolaterals; basitarsus I with no dorsal macrosetae, 0–3 prolaterals (excluding any at tip); tibia III with 2 dorsal macrosetae or with 1 plus a bristle; trochanters usually deeply notched ventrally at tip. Abdomen usually pale and mottled like carapace, covered with short setae. Terminal apophysis conspicuous, in two parts (Fig. 445); embolus rather short, straight or curved, largely hidden by median apophysis in ventral view (Figs. 438, 442); median apophysis prominent, well sclerotized, elongate (Fig. 445); conductor formed mainly of small tegular lobe. Epigynum without distinct hood; atrium usually conspicuous and divided by median septum (Figs. 439, 446, 457); copulatory openings located at sides of slender part of median septum. Copulatory tubes stout or more slender, rather short, often curved or sinuous; spermathecae bulbous, smooth or with few prominences (Figs. 440, 444, 458).

Comments. Characters by which specimens of *Arctosa* can be distinguished from those of other lycosid genera are as follows: terminal apophysis prominent and in two parts; tegular lobe small; body mottled; and carapace low, wide, and glabrous.

The genus *Arctosa* comprises a world fauna of about 50 species. Thirteen occur in North America, and nine in Canada. Dondale and Redner (1983*a*) revised the North and Central American species.

Key to species of *Arctosa*

1. Carapace uniformly dark, more than 3.0 mm in width. Male palpus with angular flat median apophysis (Fig. 438). Median septum of epigynum with transverse piece elongate (Fig. 439) .... ***raptor* (Kulczyński)** (p. 282)

Carapace at least partly pale or, if uniformly dark, then less than 3.0 mm in width. Male palpus with median apophysis variously shaped but not angular nor flat. Median septum of epigynum with transverse piece (when developed) usually short and stout (Figs. 448, 459, 468) 2

2(1). Anterior row of eyes distinctly longer than middle row (as in Fig. 441) 3

Anterior row of eyes shorter than or approximately as long as middle row (Figs. 462, 480) 4

3(2). Legs with dark rings .... ***emertoni* Gertsch** (p. 283)

Legs without dark rings ....
....***rubicunda* (Keyserling)** (p. 285)

4(2). Carapace uniformly dark. Anterior row of eyes shorter than middle row (Fig. 462). Femur I with 2 dorsal macrosetae .....
....5

Carapace pale and mottled. Anterior row of eyes approximately as long as middle row (Fig. 480). Femur I usually with 3 dorsal macrosetae 6

5(4). Male palpus with short rotund median apophysis (Fig. 455). Spermathecae attached to mesal margins of copulatory tubes (Figs. 456, 458) .... ***virgo* (Chamberlin)** (p. 287)

Male palpus with elongate median apophysis (Fig. 464). Spermathecae attached to lateral margins of copulatory tubes (Fig. 465) .... ***lama* Dondale & Redner** (p. 290)

6(4). Abdominal heart mark densely covered with compound setae (Figs. 472, 474). Pale median area of carapace narrow posteriorly, gradually widening anterior to dorsal groove (Fig. 474) 7

Abdominal heart mark sparsely covered with simple setae (Fig. 473). Pale median area of carapace widest at level of dorsal groove (Fig. 479) or carapace entirely pale 8

7(6). Tip of palpal median apophysis distinctly hooked (retrolateral view, Fig. 471). Epigynum with thick broad median septum (Figs. 467, 468) .... ***alpigena*** **(Doleschall)** (p. 290)

Tip of palpal median apophysis straight (retrolateral view, Fig. 476). Epigynum with triangular median septum (Fig. 477) .... ***insignita*** **(Thorell)** (p. 293)

8(6). Sternum pale yellow or tawny brown. Tibia I with 2 retrolateral macrosetae, and basitarsus I with 2 or 3 retrolaterals (excluding any at tip). Anterior median eyes approximately twice as large as anterior lateral eyes (Fig. 480) .... ***littoralis*** **(Hentz)** (p. 294)

Sternum dark brown or black. Tibia I and basitarsus I lacking retrolateral macrosetae (excluding any at tip of basitarsus). Anterior median eyes somewhat larger than anterior lateral eyes .... ***perita*** **(Latreille)** (p. 296)

Clé des espèces d'*Arctosa*

1. Partie dorsale de l'encéphalo entièrement foncée, plus que 3,0 mm en largeur. Palpe du mâle ayant une apophyse médiane anguleuse et aplatie (fig. 438). Septum médian de l'épigyne ayant une pièce transversale allongée (fig. 439) .... ***raptor*** **(Kulczyński)** (p. 282)

Partie dorsale de l'encéphalo au moins en partie pâle ou, si entièrement foncée, alors moins de 3,0 mm de largeur. Palpe du mâle ayant une apophyse médiane de forme variée mais ni anguleuse ni aplatie. Septum médian de l'épigyne ayant une pièce transversale (si développée) généralement courte et robuste (fig. 448, 459, 468) 2

2(1). Ligne antérieure des yeux nettement plus longue que la ligne médiane (comme dans fig. 441) 3

Ligne antérieure des yeux plus courte que, ou d'une longueur pareille à la ligne médiane (fig. 462, 480) 4

3(2). Pattes ayant des anneaux foncés .... ***emertoni*** **Gertsch** (p. 283)

Pattes sans anneaux foncés .... ***rubicunda*** **(Keyserling)** (p. 285)

4(2). Partie dorsale de l'encéphalo entièrement foncée. Ligne antérieure des yeux plus courte que la ligne médiane (fig. 462). Fémur I avec deux grandes soies dorsales 5

Partie dorsale de l'encéphalo pâle et marbrée. Ligne antérieure d'une longueur égale à la ligne médiane (fig. 480). Fémur I ayant généralement avec trois grandes soies dorsales 6

5(4). Palpe du mâle pourvue d'une apophyse médiane courte et arrondie (fig. 455). Spermathèques attachées aux marges mésales des tubes copulatoires (fig. 456, 458) .... ***virgo*** **(Chamberlin)** (p. 287)

Palpe du mâle pourvue d'une apophyse médiane allongée (fig. 464). Spermathèques attachées aux marges latérales des tubes copulatoires (fig. 465) .... ***lama*** **Dondale & Redner** (p. 299)

6(4). Strie du coeur sur l'abdomen densément couvert de soies composées (fig. 472, 474). Zone médiane pâle de la partie dorsale de l'encéphalo étroite postérieurement, se prolongeant graduellement vis-à-vis du sillon dorsal (fig. 474) 7

Strie du coeur sur l'abdomen couvert de soies simples clairsemées (fig. 473). Zone médiane pâle de la partie dorsale de l'encéphalo plus large au niveau du sillon dorsal (fig. 479) ou partie dorsale de l'encéphalo entièrement pâle 8

7(6). Extrémité du palpe de l'apophyse médiane distinctement accrochée (vue du côté arrière, fig. 471). Épigyne ayant un septum médian épais et large (fig. 467, 468) .... ***alpigena*** **(Doleschall)** (p. 290)

Extrémité du palpe de l'apophyse médiane étroite (vue du côté arrière, fig. 476). Épigyne avec septum médian triangulaire (fig. 477) .... ***insignita*** **(Thorell)** (p. 293)

8(6). Sternum jaune pâle ou brun fauve. Tibia I pourvu de deux grandes soies du côté arrière, et basitarse I avec deux ou trois grandes soies du côté arrière (n'incluant pas de grandes soies du côté arrière à l'extrémité du segment). Yeux antérieurs médians environ deux fois plus gros que les yeux antérieurs latéraux (fig. 480) .... ***littoralis*** **(Hentz)** (p. 294)

Sternum brun ou noir foncé. Tibia et basitarse I sans grandes soies du côté arrière (sauf à l'extrémité du segment). Yeux antérieurs médians un peu plus gros que les yeux antérieurs latéraux .... ***perita*** **(Latreille)** (p. 296)

Arctosa raptor (Kulczyński)

Figs. 438–441; Map 73

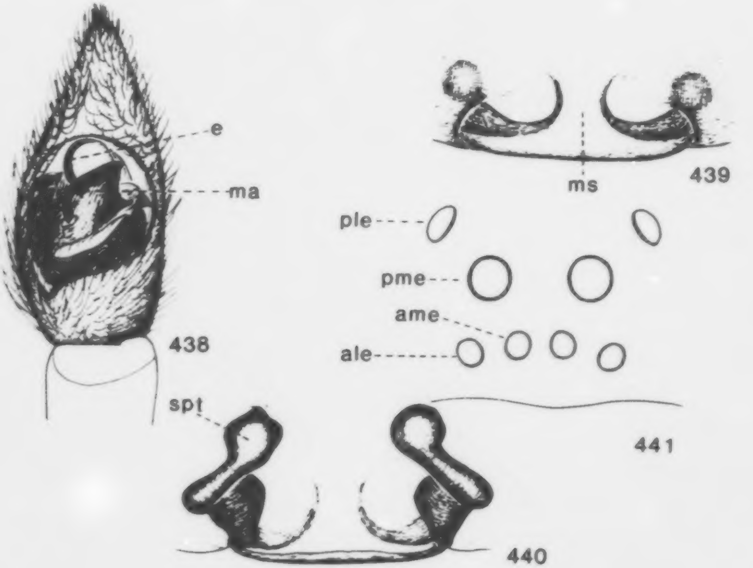
Pirata raptor Kulczyński, 1885:55, fig. 61 (pl. 11).

Lycosa quinaria Emerton, 1894:422, figs. 5, 5*a* (pl. 3); Chamberlin, 1908:277, fig. 7 (pl. 19).

Arctosa quinaria: Chamberlin and Ivie 1947:18, fig. 10 (pl. 2).

Arctosa raptor: Dondale and Redner 1983*a*:5, figs. 5–8.

Male. Total length 8.0–11.7 mm; carapace 4.97 ± 0.32 mm long, 3.71 ± 0.26 mm wide (20 specimens measured). Carapace reddish brown, covered with black setae. Anterior row of eyes procurved, approximately as long as middle row; eyes uniform in size. Chelicerae reddish brown. Legs dark brown, lacking dark rings; scopulae dense; femur I with 3 dorsal macrosetae, 1 or 2 prolaterals; tibia III with 1 or 2 dorsal macrosetae. Abdomen dusky, with few off-white chevrons; heart mark off-white, densely covered with compound setae (Fig. 472). Terminal apophysis minute; median apophysis large, angular, flat (Fig. 438).



Figs. 438–441. Structures of *Arctosa raptor*. 438, palpus of male, ventral view; 439, epigynum, ventral view; 440, spermathecae, dorsal view; 441, eye arrangement, anterior view. *ale*, anterior lateral eye; *ame*, anterior median eye; *e*, embolus, *ma*, median apophysis; *ms*, median septum; *ple*, posterior lateral eye; *pme*, posterior median eye; *spt*, spermathecae.

Female. Total length 11.0–16.0 mm; carapace 5.59 ± 0.54 mm long, 4.32 ± 0.52 mm wide (20 specimens measured). Coloring essentially as in male; anterior row of eyes usually longer than middle row (Fig. 441). Epigynal medium septum short, broad, flat, with elongate transverse piece (Fig. 439). Copulatory tubes stout; spermathecae bulbous (Fig. 440).

Comments. Specimens of *A. raptor* are distinguished by the following characteristics: body large; carapace uniformly dark and covered with black setae; leg scopulae dense; terminal apophysis minute; median apophysis angular and flat; and median septum with elongate transverse piece.

Range. Alaska to Newfoundland, south to Maine; Siberia.

Biology. *Artosa raptor* inhabits bogs, riverbanks, wet meadows, and dense conifer forests (Hackman 1954). Sytschewskaia (1935) found females in burrows at water's edge in sphagnum bogs, and Dondale and Redner (1983*a*) found a pair in alpine tundra on the summit of Mont Albert, Que. Adults have been collected from early June to mid September.

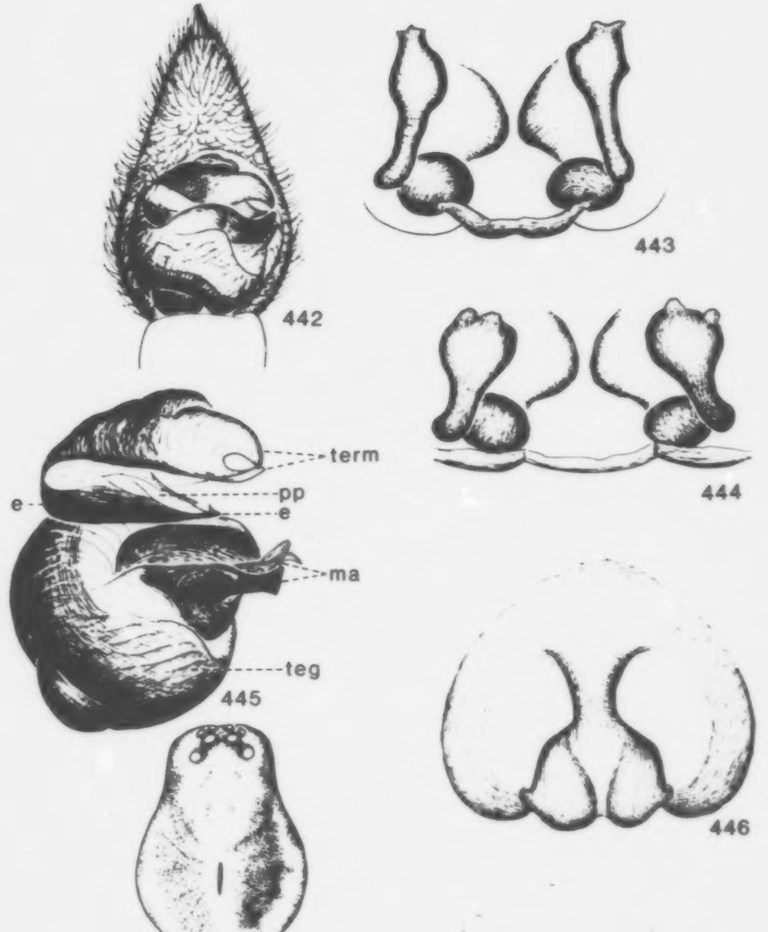
Arctosa emertoni Gertsch

Figs. 442–448; Map 74

Arctosa emertoni Gertsch, 1934*a*:5; Kaston, 1948:319, figs. 1047–1049 (pl. 53); Dondale and Redner 1983*a*:7, figs. 9–15.

Male. Total length 6.4–9.9 mm; carapace 4.18 ± 0.41 mm long, 3.06 ± 0.29 mm wide (20 specimens measured). Carapace reddish brown, mottled laterally with pale pigment, glistening, nearly glabrous (as in Fig. 447); mesal area paler; eye area darker. Anterior row of eyes straight or somewhat recurved, distinctly longer than middle row; anterior median eyes larger than anterior lateral eyes. Chelicerae reddish brown. Legs straw yellow to pale brown; scopulae sparse; femora and tibiae with dark rings. Abdomen dark brown, mottled extensively with off-white; venter pale. Terminal apophysis with broad distal part and slender basal part; median apophysis prominent, somewhat curved (viewed ventrally), with stout curved process at tip (Figs. 442, 445).

Female. Total length 6.9–12.0 mm; carapace 4.44 ± 0.40 mm long, 3.29 ± 0.30 mm wide (20 specimens measured). Coloring and eyes essentially as in male. Epigynum with median septum gradually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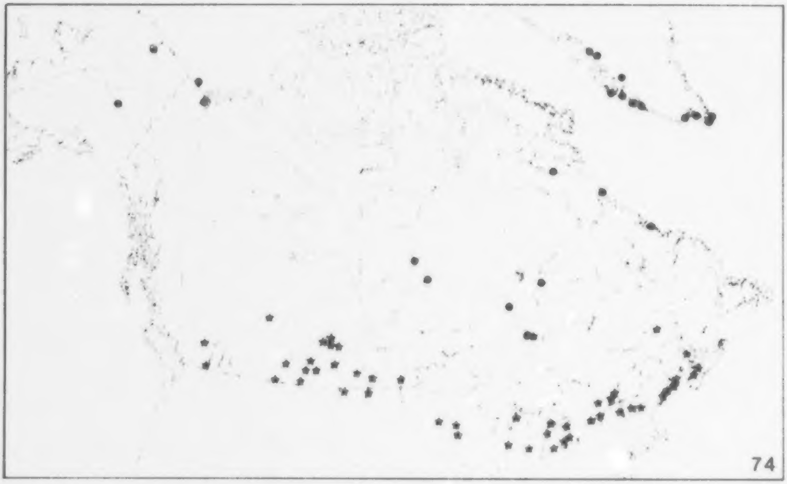
Figs. 442–448. Structures of *Arctosa emertoni*. 442, 445, palpus of male: 442, ventral view; 445, expanded bulb, ventral view; 443, 444, spermathecae, dorsal view; 446, 448, epigynums, ventral view; 447, body of female, dorsal view. *e*, embolus; *ma*, median apophysis; *ms*, median septum; *pp*, pars pendula; *teg*, tegulum; *term*, terminal apophysis.



Map 74. Collection localities of *Arctosa emertoni* (★) and *A. insignita*(●).

widening posteriorly (Figs. 446, 448). Spermathecae bulbous, with angular prominences (Figs. 443, 444).

Comments. Specimens of *A. emertoni* are distinguished by the following characteristics: anterior row of eyes distinctly longer than middle row; leg femora with dark rings; carapace distinctly mottled; and median apophysis curved.

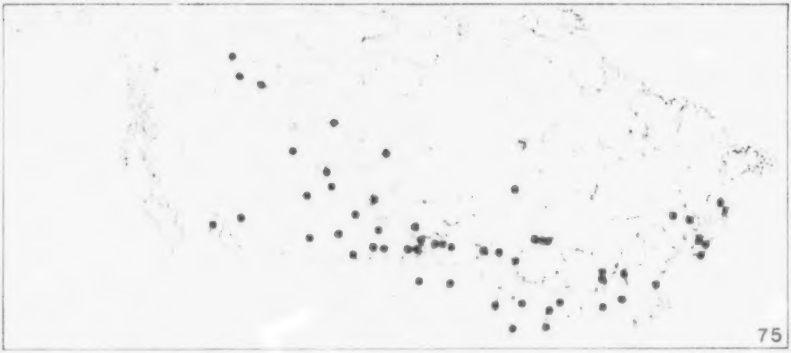
Range. Interior British Columbia to Nova Scotia, south to Utah, Colorado, and North Carolina.

Biology. Specimens of *A. emertoni* are collected in shady woodlands and grasslands, occasionally in bogs or muskeg or under beach litter. Adults have been taken from late May to late October.

Arctosa rubicunda (Keyserling)

Figs. 449–454; Map 75

Trochosa rubicunda Keyserling, 1877:663, fig. 40 (pl. 8).
Lycosa polita Emerton, 1885:484.
Lycosa rubicunda: Petrunkevitch 1911:552; Chamberlin 1908:278, fig. 9 (pl. 19).



Map 75. Collection localities of *Arctosa rubicunda*.

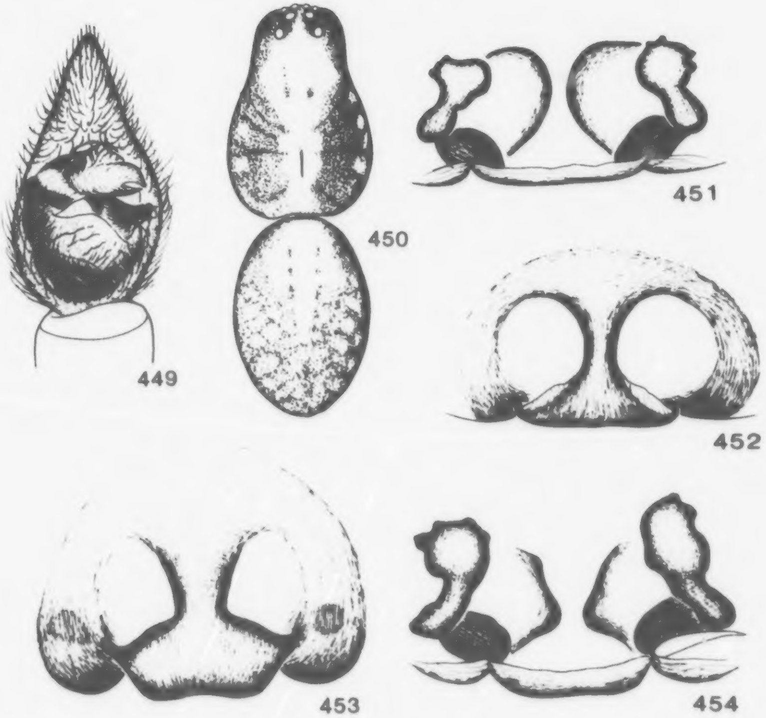
Arctosa rubicunda: Gertsch, 1934*a*:5; Kaston 1948:319, figs. 1044–1046 (pl. 53); Dondale and Redner 1983*a*:10, figs. 16–21.
Arctosa imperiosa Gertsch, 1933*b*:13, fig. 17.

Male. Total length 6.6–9.3 mm; carapace 4.24 ± 0.34 mm long, 2.92 ± 0.24 mm wide (20 specimens measured). Carapace glistening, nearly glabrous, dark reddish brown; median area tan; lateral area with indistinct paler mottling (as in Fig. 450). Anterior row of eyes straight, distinctly longer than middle row; anterior median eyes larger than anterior lateral eyes. Chelicerae dark reddish brown. Legs reddish brown, lacking dark rings; scopulae sparse. Abdomen dark brown, mottled, with indistinct chevrons; heart mark indistinct; venter pale. Terminal apophysis with large distal part and slender basal part; median apophysis long, prominent, nearly straight (ventral view, Fig. 449), with stout process at tip.

Female. Total length 8.0–12.0 mm; carapace 4.77 ± 0.49 mm long, 3.40 ± 0.39 mm wide (20 specimens measured). Coloring and eyes essentially as in male (Fig. 450). Epigynum with median septum gradually widening posteriorly (Figs. 452, 453). Spermathecae bulbous (Figs. 451, 454).

Comments. Specimens of *A. rubicunda* are distinguished by the following characteristics: anterior row of eyes longer than middle row; leg femora lacking dark rings; carapace pale and somewhat mottled; and median apophysis straight.

Range. Western Northwest Territories to Nova Scotia, south to Colorado, Kansas, and southern Pennsylvania.



Figs. 449–454. Structures of *Arctosa rubicunda*. 449, palpus of male, ventral view; 450, body of female, dorsal view; 451, 454, spermathecae, dorsal view; 452, 453, epigynums, ventral view.

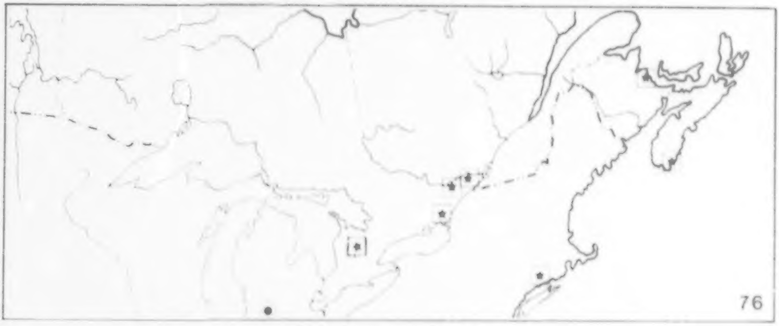
Biology. Specimens of *A. rubicunda* have been collected in bogs, meadows, fields, prairies, and deciduous forests, and at ponds, marshes, and beaches. Adults were collected from mid May to early October. Kaston (1948) recorded eggs in June and July.

Arctosa virgo (Chamberlin)

Figs. 455–460; Map 76

Allocosa virgo Chamberlin, 1925*a*:226.

Arctosa virgo: Gertsch 1934*a*:7; Kaston 1948:320, figs. 1051, 1052 (pl. 53), 1053 (pl. 54); Dondale and Redner 1983*a*:12, figs. 22–26.



Map 76. Collection localities of *Arctosa virgo* (●) and *A. lama* (★).

Male. Total length 5.1–6.9 mm; carapace 2.81–3.32 mm long, 2.04–2.47 mm wide (2 specimens measured). Carapace reddish brown, without spots or bands. Anterior row of eyes straight or procurved, shorter than middle row; eyes uniform in size (as in Fig. 462). Chelicerae reddish brown. Legs reddish brown; femora and tibiae indistinctly ringed. Abdomen dusky or charcoal gray; dorsum with small paired yellow spots; heart mark pale yellow; venter pale, with broad dusky longitudinal band. Terminal apophysis with short basal point; median apophysis short, rotund (Figs. 455, 460).

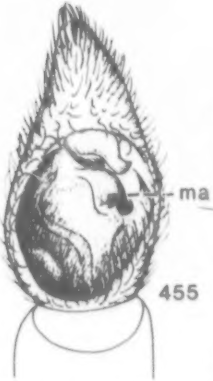
Female. Total length 5.0–6.6 mm; carapace 2.93 ± 0.24 mm long, 2.11 ± 0.21 mm wide (13 specimens measured). Coloring and eyes essentially as in male. Epigynal median septum indistinct, angular (Figs. 457, 459). Spermathecae elongate, connected mesally to copulatory tubes (Figs. 456, 458).

Comments. Specimens of *A. virgo* are distinguished by the following characteristics: carapace dark and unmarked; anterior row of eyes shorter than middle row; median apophysis short and rotund; and spermathecae connected mesally to copulatory tubes.

Range. Southern Michigan to New Jersey and Tennessee.

Biology. The habitat is unrecorded. Adults have been collected from May to early August.

Figs. 455–465. Structures of *Arctosa* spp. 455–460, *A. virgo*. 455, 460, palpus of male: 455, ventral view; 460, retrolateral view; 456, 458, spermathecae, dorsal view; 457, 459, epigynums, ventral view. 461–465, *P. lama*. 461, epigynum, ventral view; 462, eye arrangement, anterior view; 463, 464, palpus of male: 463, retrolateral view; 464, ventral view; 465, spermathecae, dorsal view. *ct*, copulatory tube; *ma*, median apophysis.



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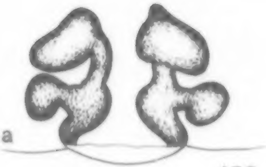

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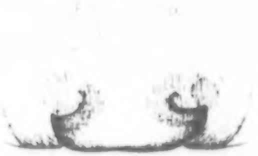

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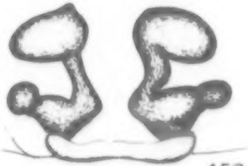

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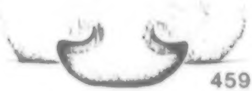

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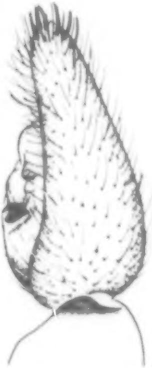

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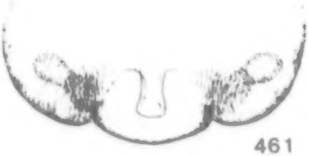

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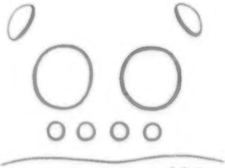

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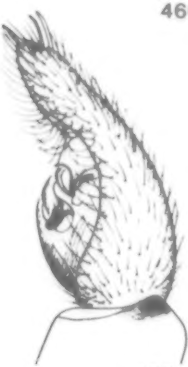

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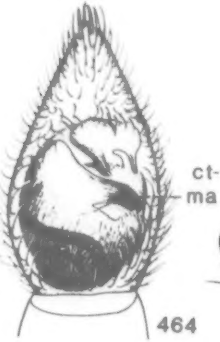

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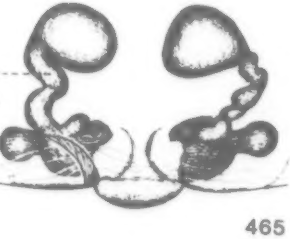

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Arctosa lama Dondale & Redner

Figs. 461–465; Map 76

Arctosa lama Dondale and Redner, 1983*a*:14, figs. 27, 29–32.

Male. Total length 4.5–5.3 mm; carapace 2.81 ± 0.14 mm long, 1.98 ± 0.12 mm wide (20 specimens measured). Carapace reddish brown, with few short dark setae. Anterior row of eyes straight or procurved, shorter than middle row; eyes uniform in size (Fig. 462). Chelicerae reddish brown. Legs reddish brown, darker distally, lacking dark rings; scopulae sparse. Abdomen dusky, with irregular pale spots laterally; heart mark pale; venter pale yellowish brown. Terminal apophysis with basal point small, finger-like; median apophysis elongate, curved (Figs. 463, 464).

Female. Total length 4.8–6.4 mm; carapace 2.81 ± 0.14 mm long, 1.97 ± 0.12 mm wide (19 specimens measured). Coloring essentially as in male. Epigynum with indistinct slender median septum (Fig. 461). Spermathecae bulbous, connected laterally to copulatory tubes (Fig. 465).

Comments. Specimens of *A. lama* are distinguished by the following characteristics: carapace dark, unmarked, with few setae; anterior row of eyes shorter than middle row; median apophysis elongate and pointed; and copulatory tubes connected to lateral surfaces of spermathecae.

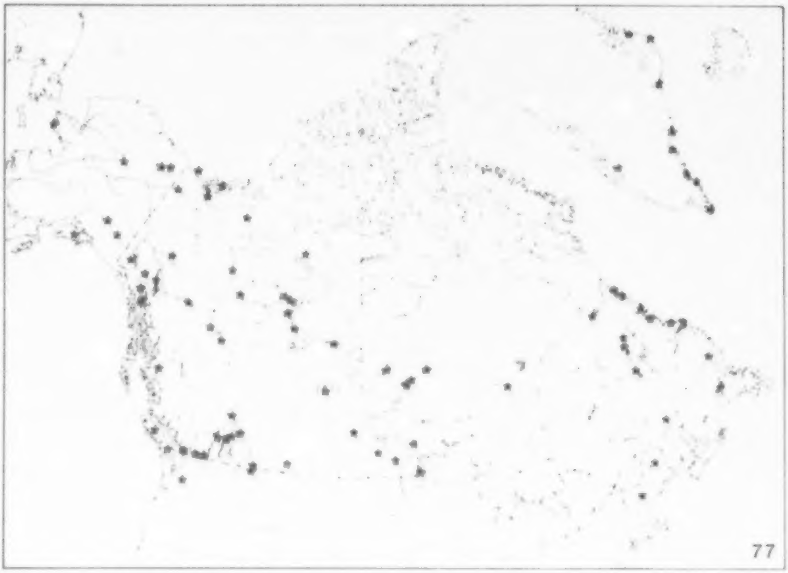
Range. Ontario to Nova Scotia, south to Alabama.

Biology. Specimens were collected in sphagnum bogs. Adult males and females were collected from late May to the end of August.

Arctosa alpigena (Doleschall)

Figs. 466–474; Map 77

Lycosa alpigena Doleschall, 1852:643.
Lycosa superba L. Koch, 1872:316.
Lycosa biunguiculata O. Pickard-Cambridge, 1873:526, fig. 2 (pl. 46).
Lycosa albohastata Emerton, 1894:423, fig. 3; Chamberlin 1908:275, fig. 1 (pl. 19).
Arctosa alpigena: Dahl 1908:307, fig. 37; Gertsch 1934*a*:4; Palmgren 1939:73, figs. 122–124; Holm 1947:22, figs. 46, 47 (pl. 4), fig. 22 (pl. 9); Locket and Millidge 1951:286, figs. 137A, 138E; Dondale and Redner 1983*a*:15, figs. 33–41.



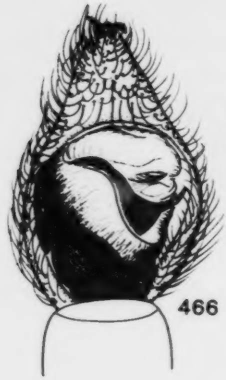
Map 77. Collection localities of *Arctosa alpigena*.

Tricca alpigena: Lugetti and Tongiorgi 1965:212, figs. 1–3 (pl. 16); 1966:145, fig. IV (5, 7).

Male. Total length 4.8–6.4 mm; carapace 3.34 ± 0.22 mm long, 2.45 ± 0.15 mm wide (20 specimens measured). Carapace dark reddish brown; setae sparse, short, pale; median area pale, gradually widening anterior to dorsal groove (as in Fig. 474). Anterior row of eyes somewhat procurved, nearly as long as middle row; eyes nearly uniform in size. Chelicerae dark reddish brown. Legs pale reddish brown; scopulae sparse; femora and tibiae usually with dark rings. Abdomen reddish brown, with dark brown or black reticulations; heart mark distinct, densely covered with white compound setae (Figs. 472, 474). Terminal apophysis with soft distal part and hard basal part; median apophysis broad, drawn out to fine hooked tip (Figs. 466, 471).

Female. Total length 6.7–9.3 mm; carapace 3.65 ± 0.25 mm long, 2.71 ± 0.20 mm wide (20 specimens measured). Coloring and eyes essentially as in male (Fig. 474). Epigynum with broad transverse median septum (Figs. 467, 468). Spermathecae bulbous, with small point at tip (Figs. 469, 470).

Comments. Specimens of *A. alpigena* are distinguished by the following characteristics: heart mark covered by dense white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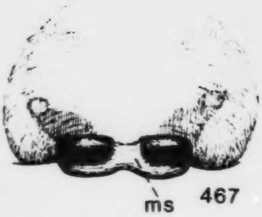

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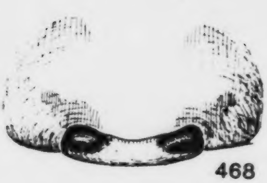
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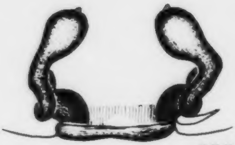
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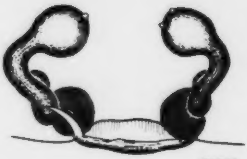
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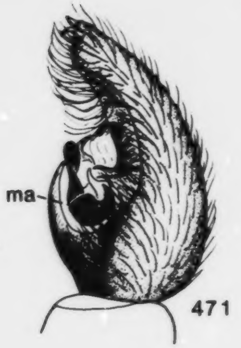

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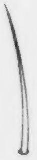
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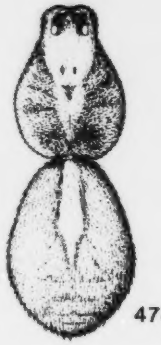
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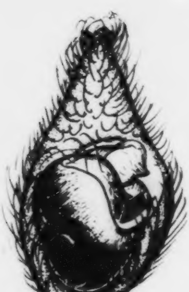
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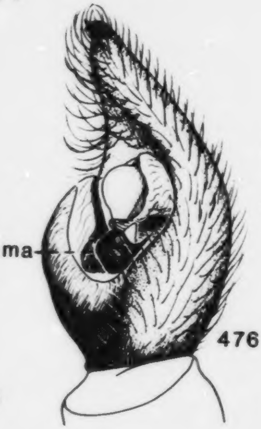

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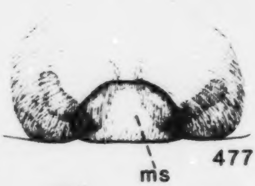

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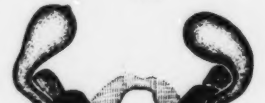
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compound setae; carapace with gradually widening median band; median apophysis with distinctly hooked tip; and median septum transverse.

Range. Alaska to Newfoundland, south to Arizona, New Mexico, and New Hampshire; Greenland, Europe, and Asia.

Biology. Specimens of *A. alpigena* have been collected in sphagnum bogs, arctic and alpine tundra, lodgepole pine or spruce forests, and alpine meadows. Adults have been collected from mid May to mid September.

Arctosa insignita (Thorell)

Figs. 475–478; Map 74

Trochosa insignita Thorell, 1872*a*:160.

Arctosa insignita: Braendegaard 1939:5, figs. 1, 3; Holm 1967:71, figs. 88, 89; Dondale and Redner 1983*a*:18, figs. 42–45.

Tricca insignita: Lugetti and Tongiorgi 1966:147, fig. V (1–4).

Male. Total length 5.3–8.3 mm; carapace 3.55 ± 0.23 mm long, 2.69 ± 0.16 mm wide (20 specimens measured). Carapace dark reddish brown; setae sparse, pale; median band pale, gradually widening anterior to dorsal groove. Anterior row of eyes somewhat procurved, nearly as long as middle row; eyes approximately uniform in size. Chelicerae reddish brown, darker distally. Legs reddish brown; scopulae sparse; femora and tibiae with dark rings. Abdomen reddish brown, with dark brown or black reticulations; heart mark densely covered by white compound setae; venter pale reddish brown or pale gray. Terminal apophysis with soft distal part and hard slender basal part; median apophysis broad, drawn out to fine straight tip (Figs. 475, 476).

Female. Total length 6.9–10.9 mm; carapace 3.69 ± 0.30 mm long, 2.81 ± 0.22 mm wide (20 specimens measured). Coloring and eyes essentially as in male. Epigynum with approximately triangular median septum (Fig. 477). Copulatory tubes coiled; spermathecae bulbous (Fig. 478).

Figs. 466–478. Structures of *Arctosa* spp. 466–474, *A. alpigena*. 466, 471, palpus of male: 466, ventral view; 471, retrolateral view; 467, 468, epigynums, ventral view; 469, 470, spermathecae, dorsal view; 472, compound seta; 473, simple seta; 474, body of female, dorsal view. 475–478, *A. insignita*. 475, 476, palpus of male: 475, ventral view; 476, retrolateral view; 477, epigynum, ventral view; 478, spermathecae, dorsal view. *ma*, median apophysis; *ms*, median septum.

Comments. Specimens of *A. insignita* are distinguished by the following characteristics: heart mark covered with dense compound setae; carapace with gradually widening median band, median apophysis with straight tip; and median septum approximately triangular.

Range. Alaska to Baffin Island and Labrador, south to Colorado; Greenland.

Biology. *A. insignita* is mainly a spider of arctic and alpine tundra. Adults have been collected from early June to the end of August.

Arctosa littoralis (Hentz)

Figs. 479–487; Map 78

Lycosa littoralis Hentz, 1844:388, fig. 9 (pl. 17).

Lycosa maritima Hentz, 1844:389, fig. 10 (pl. 17).

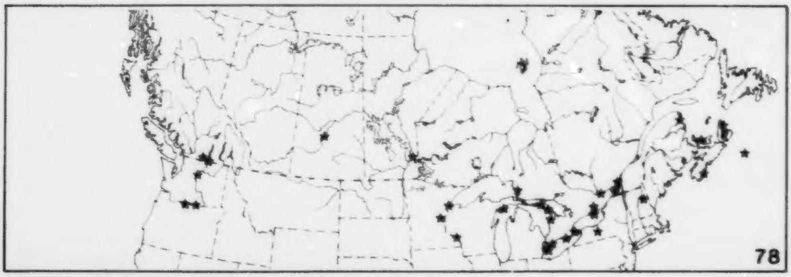
Lycosa cinerea: Emerton 1885:488, figs. 3, 3*a*, 3*b* (pl. 47); Chamberlin 1908:281, fig. 6 (pl. 20).

Arctosa trifida F. Pickard-Cambridge, 1902:330, figs. 24, 25 (pl. 31).

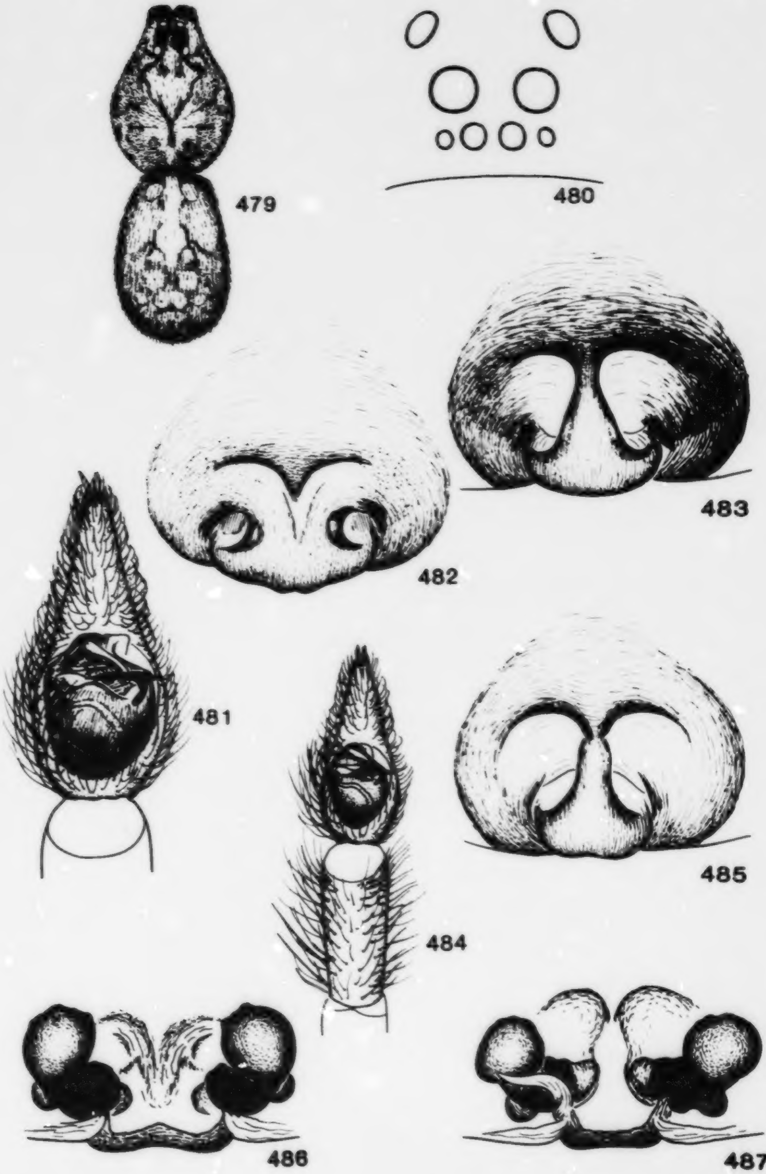
Arctosa panamana Petrunkevitch, 1925:179, fig. 97.

Arctosa littoralis: Gertsch 1934*a*:7; Kaston 1948:320, figs. 1050 (pl. 53), 1070, 1071 (pl. 55); Dondale and Redner 1983*a*:24, figs. 65–74.

Male. Total length 9.6–12.8 mm; carapace 6.06 ± 0.63 mm long, 4.69 ± 0.49 mm wide (20 specimens measured). Carapace pale, somewhat mottled; setae pale, sparse; carapace with longitudinal band laterally and pale spot near each leg base. Anterior row of eyes straight or somewhat procurved, somewhat shorter than middle row; anterior median eyes approximately twice as large as anterior lateral



Map 78. Collection localities of *Arctosa littoralis*.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Figs. 479–487. Structures of *Arctosa littoralis*. 479, body of female, dorsal view; 480, eye arrangement, anterior view; 481, 484, palpus of male, ventral view; 482, 483, 485, epigynums, ventral view; 486, 487, spermathecae, dorsal view.

eyes (Fig. 480). Chelicerae dark reddish brown; fangs with outer prominence. Sternum pale yellow or tawny brown. Legs yellowish brown, darker distally, usually with indistinct brown rings; scopulae sparse; tibia I with 2 retrolateral macrosetae; basitarsus I with 2 or 3 retrolateral macrosetae (excluding any at tip). Abdomen yellow to yellowish brown, with brown reticulations; heart mark light brown; venter pale yellow. Terminal apophysis with long slender sclerotized part lying parallel to embolus; median apophysis long, stout, strongly angled near tip (Figs. 481, 484).

Female. Total length 11.2–14.7 mm; carapace 6.08 ± 0.51 mm long, 4.88 ± 0.42 mm wide (20 specimens measured). Coloration and eyes essentially as in male. Cheliceral fangs lacking outer prominence. Leg scopulae more dense than in male (particularly on leg I). Epigynum variable; median septum usually broad, concave at sides (Figs. 482, 483, 485). Spermathecae bulbous (Figs. 486, 487).

Comments. Specimens of *A. littoralis* are distinguished by the following characteristics: body large; sternum yellow or tawny brown; anterior median eyes about twice as large as anterior lateral eyes; tibia and basitarsus I with retrolateral macrosetae; terminal apophysis with long slender part lying parallel to embolus; and median septum broad and laterally concave.

Range. Interior British Columbia to Nova Scotia, south to Panama.

Biology. Specimens of *A. littoralis* are found at night, running on sandy beaches beside both fresh and salt water. During daylight hours, they ensconce themselves under driftwood or in burrows in the sand. Kaston (1948) reported the burrows to be 15–25 cm deep. Adults have been collected from February to November.

Arctosa perita (Latreille)

Figs. 488–491; Map 73

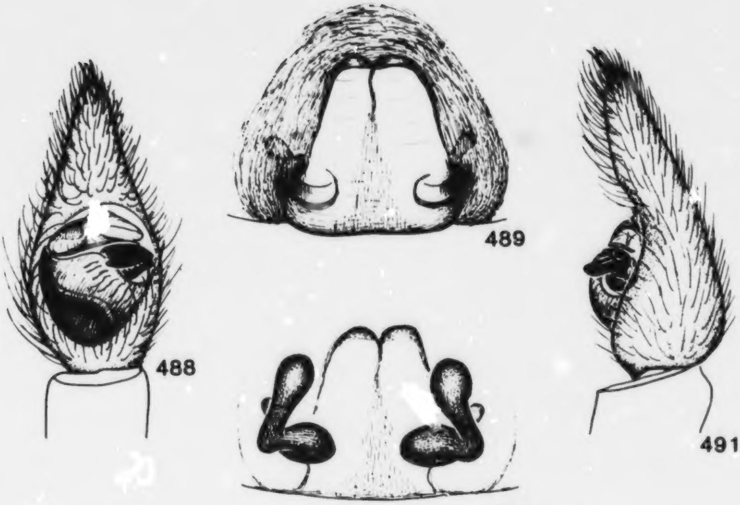
Aranea perita Latreille, 1799:170.

Lycosa picta Hahn, 1831:106, fig. 79.

Arctosa lynx C.L. Koch, 1848:133, fig. 1364.

Lycosa filicata Simon, 1876:277.

Arctosa perita: C.L. Koch 1848:133, figs. 1362, 1363; Locket and Millidge 1951:284, figs. 137B, 138B; Dondale and Redner 1983*a*:19, figs. 46–49.



Figs. 488–491. Genitalia of *Arctosa perita*. 488, 491, palpus of male: 488, ventral view; 491, retrolateral view; 489, epigynum, ventral view; 490, spermathecae, dorsal view.

Arctosa perita arenicola Simon, 1937:1116, 1138.

Arctosa perita perita: Lugetti and Tongiori 1965:175, figs. 1–4 (pl. 2), 1 (pl. 4).

Arctosa perita latithorax Lugetti and Tongiorgi, 1965:180, fig. 2 (pl. 4), 1–4 (pl. 5).

Male. Total length 5.3–6.3 mm; carapace 3.01–3.40 mm long, 2.15–2.59 mm wide (5 specimens measured). Carapace brown or dark brown, with black radiating lines, sparsely covered with pale setae; median area irregular, pale; submarginal spots pale. Anterior row of eyes straight or somewhat procurved, nearly as long as middle row; anterior median eyes somewhat larger than anterior lateral eyes. Chelicerae dark brown. Sternum dark brown to black. Legs pale yellowish brown; scopulae sparse; femora, tibiae, and basitarsi with dark rings; tibia and basitarsus I lacking retrolateral macrosetae (excluding any at tip). Abdomen dark brown to black, mottled with yellowish brown; heart mark pale brown or yellowish brown; venter pale brown, sometimes with broad dusky longitudinal band. Terminal apophysis with distal part soft; basal part sclerotized; median apophysis elongate, not tapered (Figs. 488, 491).

Female. Total length 7.4–7.5 mm; carapace 3.06–3.31 mm long, 2.22–2.48 mm wide (2 specimens measured). Coloration and eyes essentially as in male. Epigynal median septum slender anteriorly, gradually widening posteriorly (Fig. 489). Spermathecae bulbous (Fig. 490).

Comments. Specimens of *A. perita* are distinguished by the following characteristics: body small; sternum dark; tibiae and basitarsi I lacking retrolateral macrosetae; anterior median eyes somewhat larger than anterior lateral eyes; and median septum posteriorly widened.

Range. Vancouver, B.C.; Europe, Asia, North Africa. The species has apparently been introduced into North America in recent decades.

Biology. In Europe *A. perita* occupies sand dunes and sandy heathlands, where the females make their silk-lined burrows. Wiebes (1959) gives the period of maturity as August to the following May; mating takes place in April and May. The British Columbia specimens were found on open ground on Burnaby Mountain in late May.

Genus *Alopecosa* Simon

These wolf spiders are of medium size and have thick bodies and legs. Their color patterns feature areas of dark red, black, and white; these patterns blend with the mosses, lichens, and forest litter on which the spiders roam and probably provide a degree of protection from predators. Some are known to live in shallow silk-lined burrows in soil or moss, at least during the overwintering and ovipositing seasons (Emerton 1919, Leech 1966). The egg sacs are nearly spherical and gray or tan in color.

Many of these spiders belong to the fauna of the far north, although a few, such as *A. pictilis* (Emerton) and *A. aculeata* (Clerck), extend southward into the cool temperate zone. Only *A. kochii* (Keyserling) is restricted to the cool temperate zone of North America.

Description. Total length 6.6–16.0 mm. Carapace dark reddish brown to nearly black laterally; setae dense, black or white; eye area black; median band pale, broad, distinct; submarginal bands (if present) pale or represented by series of spots (Fig. 495). Anterior row of eyes somewhat procurved, shorter than middle row; anterior median eyes equal to or somewhat larger than anterior lateral eyes. Chelicerae reddish brown to nearly black; promargin with 3 teeth; retromargin with 2 teeth (rarely 1 or 3 on one chelicera or the other) (Fig. 509). Sternum reddish brown to black, usually with many setae (more noticeable in males); setae short, stout, curved. Legs long, stout, reddish brown to black; scopulae well developed; femur I with 3 dorsal macrosetae, 1 prolateral; tibia I with 0–2 dorsal macrosetae, 1 or 2 prolaterals, 0–2 retrolaterals, 3 pairs of ventrals; basitarsus I with no dorsal macrosetae, 0–3 prolaterals, 0–3 retrolaterals, 3 pairs of ventrals plus an unpaired one at tip. Abdomen with series of black oblique marks, sometimes coalescing to form longitudinal bands or chevrons; anterior sides with conspicuous black area; venter reddish brown (Figs. 495, 519). Cymbium with or without stout macrosetae at tip; terminal apophysis usually short, lobe-like, partly concealed by median apophysis in ventral view; embolus moderately long, curved, slender, often concealed by median apophysis; median apophysis angular, flattened, usually pointed or toothed at retrolateral extremity (Figs. 499, 502, 511); conductor formed mainly of small tegular lobe. Epigynum with or without hood and with plate; plate variously shaped, set in shallow atrium; hood (if present) with 1 cavity or with paired small cavities set close together (Figs. 492, 503, 512, 521); copulatory openings at sides of median septum; spermathecae ovoid, smooth or bearing minute nodules (Figs. 494, 508, 513, 525).

Comments. Characters that distinguish representatives of the genus *Alopecosa* from those of other lycosid genera are as follows: cheliceral retromargin with 2 teeth; femur I with 1 prolateral macroseta; body size medium; median apophysis flattened and angular; and hood cavities (when present) small and closely set.

The genus *Alopecosa* comprises a world fauna of approximately 75 species. European species were treated by Lugetti and Tongiorgi (1969). Eight occur in North America and seven in Canada. Dondale and Redner (1979) revised the North American species, and Jiménez and Dondale (1984) added a species from Mexico.

Key to species of *Alopecosa*

1. Male 2
Female 8

2(1). Terminal apophysis lobe-like and short; tegulum with distal extension on prolateral side; tip of embolus visible in ventral view (Figs. 499, 502, 511) 3

Terminal apophysis spur-like and slender; tegulum lacking distal extension on prolateral side; tip of embolus not visible in ventral view (not to be confused with tip of terminal apophysis) (Figs. 518, 531, 534) 5

3(2). Base of embolus distinctly arched toward prolateral margin of genital bulb (Figs. 502, 511) 4

Base of embolus nearly straight (Fig. 499) ....
.... ***aculeata* (Clerck)** (p. 304)

4(3). Tooth on median apophysis slender, directed ventrally (Figs. 502, 504–506) .... ***kochii* (Keyserling)** (p. 307)

Tooth on median apophysis stouter, directed mesally (Fig. 511) .... ***pulverulenta* (Clerck)** (p. 310)

5(2). Distitarsi with 2 uneven rows of short stiff setae ventrally (Fig. 517) 6

Distitarsi lacking rows of short stiff setae ventrally 7

6(5). Median apophysis with tooth terminating in 2 angles, lacking minute denticle near retrolateral margin (Figs. 516, 518) .... ***exasperans* (O. Pickard-Cambridge)** (p. 312)

Median apophysis with tooth terminating in single angle, with minute denticle near retrolateral margin (Figs. 523, 524) .... ***mutabilis* (Kulczyński)** (p. 313)

7(5). Tooth on median apophysis curved basally, stout and hooked at tip (Fig. 527) .... ***pictilis* (Emerton)** (p. 315)

Tooth on median apophysis directed ventrally, slender and straight at tip (Fig. 538) ..... ***hirtipes* (Kulczyński)** (p. 317)

8(1). Epigynum hooded; copulatory openings in grooves at posterolateral angles of median septum (Figs. 492, 503, 512) 9

Epigynum hoodless; copulatory openings at anterolateral angles of median septum (Figs. 515, 521, 530, 541) 11

9(8). Hood with 2 rounded cavities (Figs. 492, 503); median septum internally with paired longitudinal ridges at midline (dorsal view, Figs. 493, 507). Spermathecae large relative to median septum; copulatory tubes stout (Fig. 493, 507) 10

Hood with single rectangular cavity; median septum lacking paired ridges at midline (Fig. 512). Spermathecae minute; copulatory tubes slender (Fig. 513) ....
.... ***pulverulenta* (Clerck)** (p. 310)

10(9). Median septum with anterior slender part one-fourth width (or less) of posterior part (Fig. 492). Copulatory tubes arched toward midline; spermathecae extending anteriorly to anterior extremity of hood (Figs. 493, 494, 496) .... ***aculeata*** **(Clerck)** (p. 304)

Median septum with anterior slender part usually one-third width (or more) of posterior part (Figs. 500, 501, 503). Copulatory tubes usually not arched toward midline; spermathecae extending anteriorly approximately three-fourths distance toward hood (Figs. 507, 508, 510) .... ***kochii*** **(Keyserling)** (p. 307)

11(8). Atrium broad, distinct (Figs. 515, 521, 522) 12

Atrium slit-like, indistinct (Figs. 530, 541) 13

12(11). Thickened part of copulatory tubes arched (Figs. 514, 520) .... ***exasperans*** **(O. Pickard-Cambridge)** (p. 312)

Thickened part of copulatory tubes nearly straight (Figs. 525, 526) .... ***mutabilis*** **(Kulczyński)** (p. 313)

13(11). Copulatory openings transverse (Figs. 528–530) .... ***pictilis*** **(Emerton)** (p. 315)

Copulatory openings longitudinal or oblique (Figs. 539–543) .... ***hirtipes*** **(Kulczyński)** (p. 317)

Clé des espèces d'*Alopecosa*

1. Mâle 2

Femelle 8

2(1). Apophyse terminale courte, en forme de lobe; tégula ayant une prolongation distale sur la surface du côté avant; extrémité de l'embolus visible en vue ventrale (fig. 499, 502, 511) 3

Apophyse terminale grêle, en forme d'éperon; tégula sans prolongation distale sur le côté avant; extrémité de l'embolus non visible en vue ventrale (à ne pas confondre avec l'extrémité de l'apophyse terminale) (fig. 518, 531, 534) 5

3(2). Base de l'embolus arquée distinctement vers la marge prolatérale du bulbe génital (fig. 502, 511) 4

Base de l'embolus presque étroite (fig. 499) .... ***aculeata*** **(Clerck)** (p. 304)

4(3). Dent sur l'apophyse médiane grêle, orientée vers le ventre (fig. 502, 504–506) .... ***kochii* (Keyserling)** (p. 307)

Dent sur l'apophyse médiane plus robuste, orientée mésalement (fig. 511) .... ***pulverulenta* (Clerck)** (p. 310)

5(2). Distitarse ayant deux rangées inégales de soies courtes rigides sur le ventre (fig. 517) 6

Distitarse sans rangées de soies courtes rigides sur le ventre 7

6(5). Apophyse médiane ayant une dent formant deux angles à l'extrémité, sans dent minuscule près de la marge du côté arrière (fig. 516, 518) .... ***exasperans* (O. Pickard-Cambridge)** (p. 312)

Apophyse médiane ayant une dent formant un angle à l'extrémité, et une dent minuscule près de la marge rétrolatérale (fig. 523, 524) .... ***mutabilis* (Kulczyński)** (p. 313)

7(5). Dent sur l'apophyse médiane courbée vers la base, robuste et accrochée à l'extrémité (fig. 527) .... ***pictilis* (Emerton)** (p. 315)

Dent sur l'apophyse médiane dirigée vers le ventre grêle et étroite à l'extrémité (fig. 538) .... ***hirtipes* (Kulczyński)** (p. 317)

8(1). Épigyne pourvue d'un capuchon; orifices copulatoires dans les sillons aux angles du côté postérieur du septum médian (fig. 492, 503, 512).. 9

Épigyne sans capuchon; orifices copulatoires aux angles du côté antérieur du septum médian (fig. 515, 521, 530, 541) 11

9(8). Capuchon ayant deux cavités arrondies (fig. 492, 503); septum médian à l'antérieur avec stries longitudinales doubles à la ligne médiane (vue dorsale, fig. 493, 507). Spermathèques grosses en relation avec le septum médian; tubes copulatoires robustes (fig. 493, 507) 10

Capuchon ayant une seule cavité rectangulaire; septum médian sans stries doubles à la ligne médiane (fig. 512). Spermathèques minuscules; tubes copulatoires grêles (fig. 513) .... ***pulverulenta* (Clerck)** (p. 310)

10(9). Septum médian ayant une partie antérieure quatre fois ou moins plus petite que la partie postérieure (fig. 492). Tubes copulatoires arqués vers la ligne médiane; spermathèques se prolongeant vers l'avant à l'extrémité antérieure du capuchon (fig. 493, 494, 496) .... ***aculeata* (Clerck)** (p. 304)

Septum médian ayant une partie antérieure généralement au moins trois fais plus petite que la partie postérieure (fig. 500, 501, 503). Tubes copulatoires généralement non arqués vers la ligne médiane; spermathèques étendues antérieurement environ aux trois quarts de la distance jusqu'au capuchon (fig. 507, 508, 510) .... ***kochii* (Keyserling)** (p. 307)

11(8). Atrium large, distinct (fig. 515, 521, 522) 12

Atrium en forme de fente indistincte (fig. 530, 541) 13

12(11). Partie épaisse des tubes copulatoires arquée (fig. 514, 520) .... ***exasperans* (O. Pickard-Cambridge)** (p. 312)

Partie épaisse des tubes copulatoires presque étroite (fig. 525, 526) .... ***mutabilis* (Kulczyński)** (p. 313)

13(11). Orifices copulatoires transversales (fig. 528–530) .... ***pictilis* (Emerton)** (p. 315)

Orifices copulatoires longitudinales ou obliques (fig. 539–543) .... ***hirtipes* (Kulczyński)** (p. 317)

Alopecosa aculeata (Clerck)

Figs. 492–499; Map 79

Araneus aculeatus Clerck, 1758:87, fig. 3 (pl. 4).

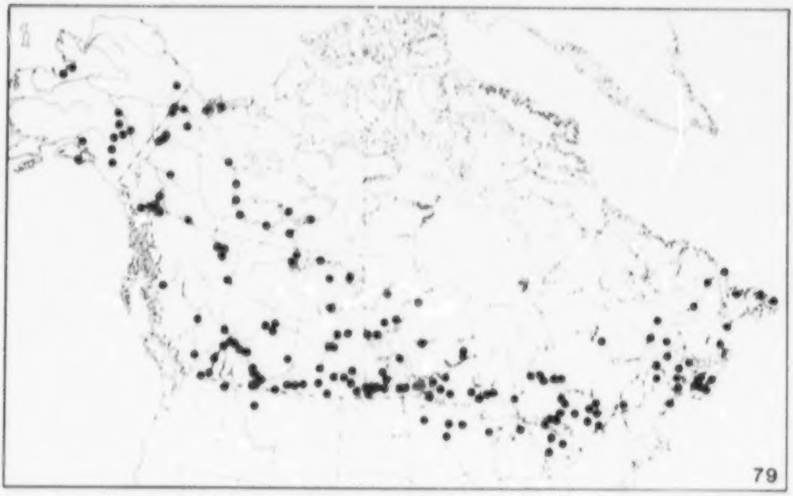
Tarentula aculeata: Thorell 1868:379; Palmgren 1939:26, figs. 11–13, 22; Holm 1947:19, figs. 17, 18 (pl. 9), 32 (pl. 3); Kaston 1948: 312, figs. 1024, 1025 (pl. 52), 2139, 2140 (pl. 144).

Lycosa beanii Emerton, 1894:421, figs. 2, 2*a*–2*c* (pl. 3); Chamberlin 1908:223, figs. 4, 5 (pl. 19).

Alopecosa aculeata: Charitonov 1931:154, 155, 161; Dondale and Redner 1979:1038, figs. 1, 4, 5, 17, 22–24, 26.

Male. Total length 7.2–9.5 mm; carapace 4.29 ± 0.22 mm long, 3.07 ± 0.18 mm wide (25 specimens measured). Carapace with a few darker lines radiating from dorsal groove area; lateral areas dark reddish brown to nearly black; submarginal bands absent. Chelicerae dark reddish brown. Sternum reddish brown; setae numerous, short, dark, curved, erect. Legs reddish brown; femora I and II and tibia I darker than other segments; femora sometimes with dark rings. Abdomen with pair of dark lateral bands; bands sometimes breaking into series of spots posteriorly or connecting transversely to form chevrons; heart mark (if present) dark; venter pale reddish brown. Palpus with cymbium lacking terminal macrosetae; tegulum with distal extension on prolateral side of genital bulb; terminal apophysis small, pale, lobe-like; embolus nearly straight at base, with only base and tip visible in ventral view; median apophysis angular; distal margin of median apophysis oblique, pointed; tip of median apophysis with flat, mesally directed tooth (Figs. 497–499).

Female. Total length 8.1–11.3 mm; carapace 4.31 ± 0.30 mm long, 3.16 ± 0.25 mm wide (25 specimens measured). Coloring essentially as in male, but carapace sometimes with faint submarginal bands. Legs with femora I and II and tibia I not darker than other leg segments. Dorsum of abdomen often with heart mark; heart mark dark, flanked by pair of pale longitudinal bands joining posteriorly (Fig. 495). Epigynum hooded; hood with 2 deep cavities; anterior part of median septum slender, one-fourth width (or less) of posterior part (Fig. 492); median septum with pair of internal longitudinal ridges at midline (Figs. 493, 494, 496); copulatory openings at posterolateral angles of median septum (Fig. 492). Copulatory tubes arched toward midline; spermathecae extending anteriorly to anterior extremity of hood (Figs. 493, 494, 496).

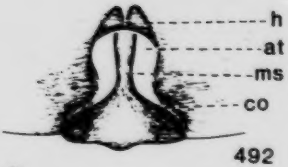


Map 79. Collection localities of *Alopecosa aculeata*.

Comments. Specimens of *A. aculeata* are distinguished by the following characteristics: embolus base nearly straight; terminal apophysis lobe-like; tegulum with distal extension on prolateral side; median septum with anterior part one-fourth width (or less) of posterior part; copulatory tubes arched toward midline; and spermathecae extending anteriorly to anterior extremity of hood.

Range. Alaska to Newfoundland, south to Arizona and Connecticut; Europe and Asia.

Biology. Specimens of *A. aculeata* have been collected mainly in sunlit forest glades and shrubby meadows. Buckle (1972) described the courtship, including the sounds produced. Adult males have been collected from late April to October and adult females from May to mid November. Females with egg sacs were found from June to mid October and females with young in August. Egg counts of 95–165 per sac are recorded (Holm 1947).



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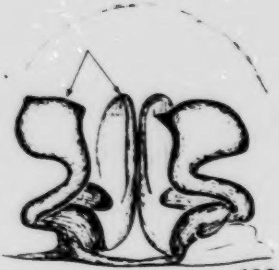

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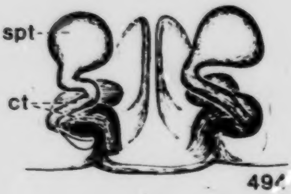

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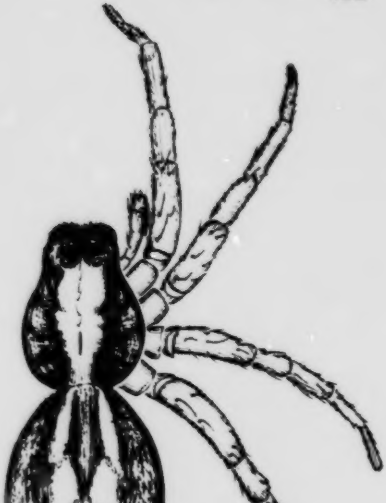

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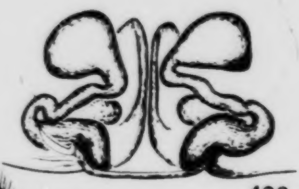

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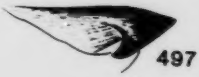

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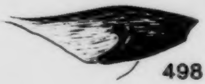

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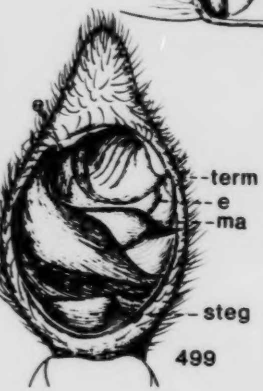
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Alopecosa kochii (Keyserling)

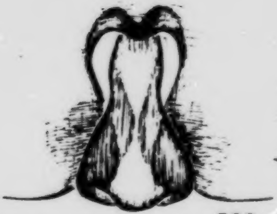
Figs. 500–510; Map 80

Tarentula kochii Keyserling, 1877:636, fig. 18 (pl. 7).
Lycosa kochii: Chamberlin 1908:263, figs. 3, 4 (pl. 9).
Lycosa brunneiventris Banks, 1894:50.
Alopecosa kochi: Petrunkevitch 1911:551; Dondale and Redner, 1979:1039, figs. 2, 3, 7, 8, 25, 27–32.
Pardosa heretica Chamberlin, 1925*b*:125, fig. 37.
Tarentula gertschi Schenkel, 1951:29, fig. 37.
Lycosa jollensis Schenkel, 1951:35, fig. 40.

Male. Total length 6.6–11.0 mm; carapace 4.67 ± 0.53 mm long, 3.30 ± 0.40 mm wide (25 specimens measured). Carapace with few darker lines radiating from dorsal groove area; lateral areas dark reddish brown to nearly black; submarginal bands faint or absent. Chelicerae dark reddish brown. Sternum reddish brown to nearly black, with many stout erect setae. Legs reddish brown; tibiae and tarsi I and II somewhat darker than III and IV; femora with indistinct dark rings. Abdomen with or without heart mark; anterior end dark laterally; lateral areas mottled with orange (or yellow) and black; venter pale or dark. Cymbium with 5–7 stout macrosetae at tip; tegulum with distal extension on prolateral side of genital bulb; terminal apophysis small, pale, lobe-like; embolus arched prolaterally at base; median apophysis angular, pointed, with tooth at tip; tooth flat, ventrally directed (Figs. 502, 504–506).

Female. Total length 9.0–16.0 mm; carapace 5.51 ± 0.91 mm long, 4.03 ± 0.82 mm wide (25 specimens measured). Coloring essentially as in male. Epigynal hood with 2 shallow cavities; median septum with paired longitudinal ridges at midline (Figs. 507, 508, 510); anterior part of median septum slender, one-third (or more) width of posterior part, as in Figs. 500, 503, and rarely less than one-third width of posterior part, as in Fig. 501. Copulatory openings situated at posterolateral angles of median septum. Copulatory tubes usually not arched toward midline; spermathecae extending anteriorly approximately three-fourths distance from posterior extremity to hood (Figs. 507, 508, 510).

Figs. 492–499. Structures of *Alopecosa aculeata*. 492, epigynum, ventral view; 493, 494, 496, spermathecae, dorsal view; 495, body of female, dorsal view; 497–499, palpus of male: 497, 498, median apophysis, distoventral view; 499, palpus, ventral view. *at*, atrium; *co*, copulatory opening; *ct*, copulatory tube; *e*, embolus; *h*, hood; *ma*, median apophysis; *ms*, median septum; *spt*, spermatheca; *steg*, subtegulum; *term*, terminal apophysis.



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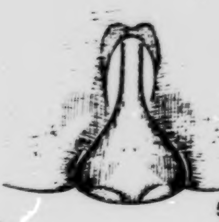

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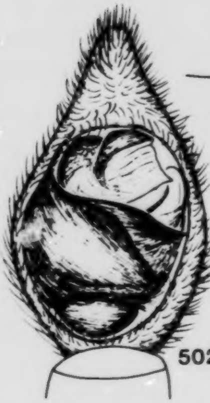

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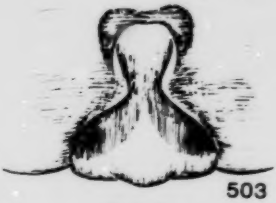

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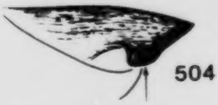

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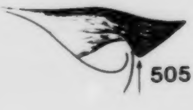

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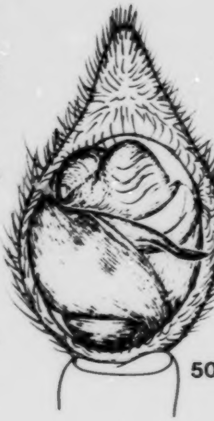

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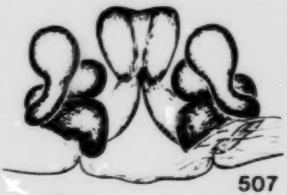

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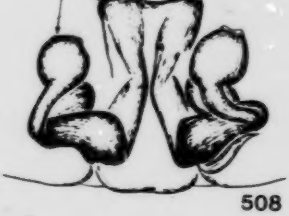

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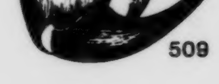

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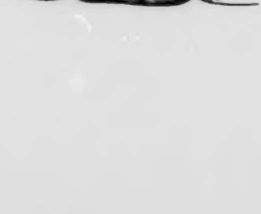

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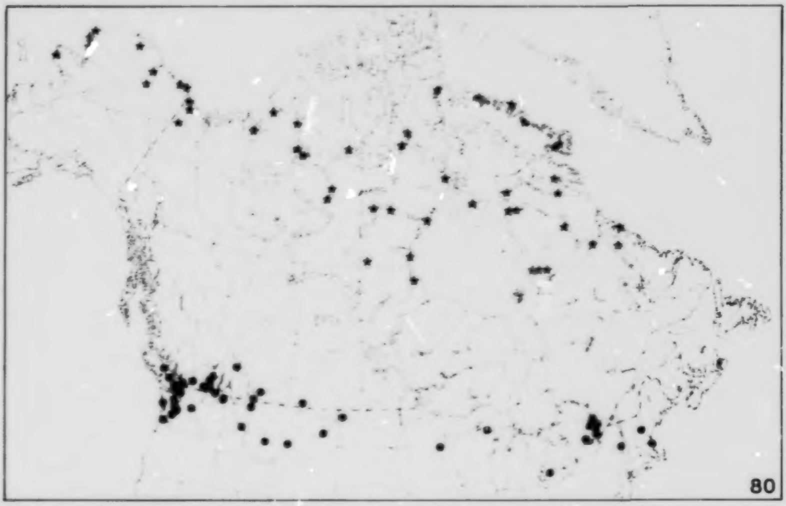

Map 80. Collection localities of *Alopecosa kochii* (●) and *A. hirtipes* (★).

Comments. Specimens of *A. kochii* are distinguished by the following characteristics: embolus base arched; terminal apophysis lobe-like; median apophysis with flat ventrally directed tooth at tip (may be somewhat mesally directed in some specimens); tegulum with distal extension on prolateral side; median septum with anterior part one-third the width (or more) of posterior part; copulatory tubes usually not arched toward midline; and spermathecae extending anteriorly only three-fourths or less the distance from posterior extremity to hood.

Range. Southern British Columbia to southern Ontario and Massachusetts, south to Baja California and Texas.

Biology. Hagstrum (1970*a*, 1970*b*, 1971) made an extensive field and laboratory investigation of the life history, population density, energy consumption and production, and food utilization of *A. kochii* in California. Adult males have been collected from February to mid November and adult females from May to December. Egg sacs were recorded in May.

Figs. 500–510. Structures of *Alopecosa kochii*. 500, 501, 503, epigynums, ventral view; 502, 504, 506, palpus of male: 502, 506, ventral view; 504, 505, median apophysis, distoventral view; 507, 508, 510, spermathecae, dorsal view; 509, chelicera, retrolateral view.

Alopecosa pulverulenta (Clerck)

Figs. 511–513; Map 81

Araneus pulverulentus Clerck, 1758:93, fig. 6 (pl. 4).
Alopecosa pulverulenta: Caporiacco 1936:358; Palmgren 1939:24, figs. 14–16, 23; Holm 1947:18, figs. 15 (pl. 9), 33 (pl. 3); Dondale and Redner 1979:1041, figs. 6, 33, 35.
Tarentula aquilonaris Fox, 1940:44, fig. 2.

Male. Total length 6.5–10.0 mm; carapace 3.30–3.90 mm long, 2.40–2.80 mm wide (range of 15 European specimens reported by Lugetti and Tongiorgi, 1969). Carapace with few darker lines radiating from dorsal groove area; lateral areas dark reddish brown to nearly black; submarginal bands indistinct or absent. Chelicerae reddish brown. Sternum reddish brown, sometimes with pale middle band, with many dark erect curved setae. Legs reddish brown; femora with darker rings; femora I and II darker than III and IV. Abdomen with or without heart mark; lateral areas of dorsum often with bands or spots or both; bands pale, longitudinal, paired, joining posteriorly; spots black, oblique, paired, sometimes joining to form longitudinal bands; venter reddish brown. Cymbium without macrosetae at tip; terminal apophysis lobe-like; tegulum with distal extension on prolateral side; embolus arched at base; median apophysis angular, with tip of tooth directed mesally (Fig. 511).

Female. Total length 10.3 mm; carapace 4.39 mm long, 3.30 mm wide (1 specimen measured). Coloring essentially as in male but carapace usually with distinct submarginal bands. Legs with femora I and II concolorous with III and IV. Abdomen sometimes lacking paired dark oblique spots. Epigynum with hood cavity rectangular; median septum moderately wide; copulatory openings situated at posterolateral angles of median septum (Fig. 512). Copulatory tubes tortuous; spermathecae small, with 2 or 3 small nodules or none (Fig. 513).

Comments. Specimens of *A. pulverulenta* are distinguished by the following characteristics: embolus base arched; tegulum with

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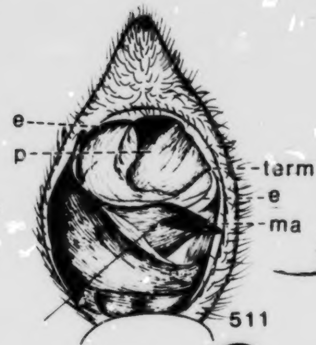
Figs. 511–520. Structures of *Alopecosa* spp. 511–513, *A. pulverulenta*. 511, palpus of male, ventral view; 512, epigynum, ventral view; 513, spermathecae, dorsal view. 514–520, *A. exasperans*. 514, 520, spermathecae, dorsal view; 515, epigynum, ventral view; 516, 518, palpus of male: 516, prolateroventral view; 518, ventral view; 517, distitarsus IV, ventral view; 519, abdomen of female, dorsal view. *atr*, atrium; *ct*, copulatory tube; *e*, embolus; *h*, hood; *ma*, median apophysis; *ms*, median septum; *p*, palea; *spt*, spermatheca; *term*, terminal apophysis.



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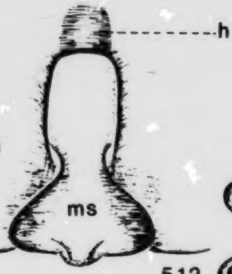

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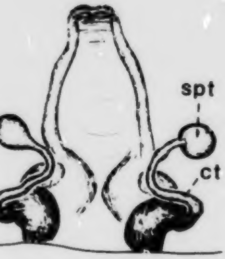

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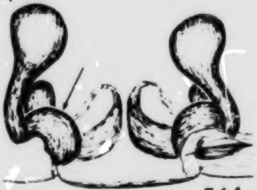

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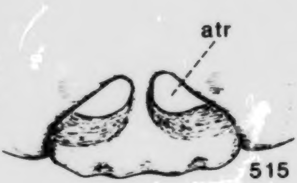

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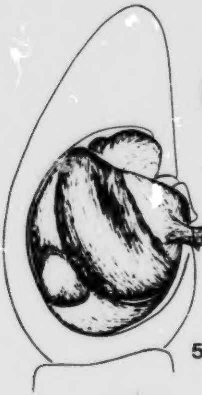

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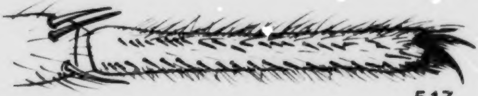

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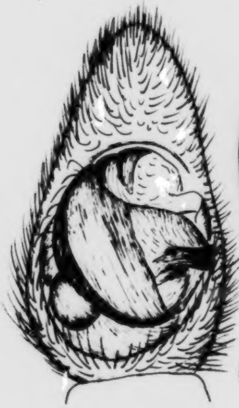

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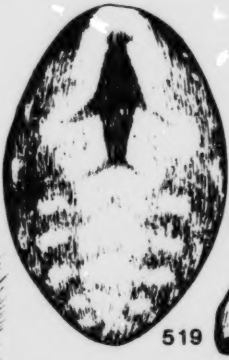

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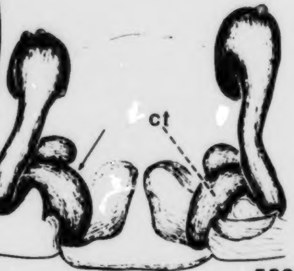

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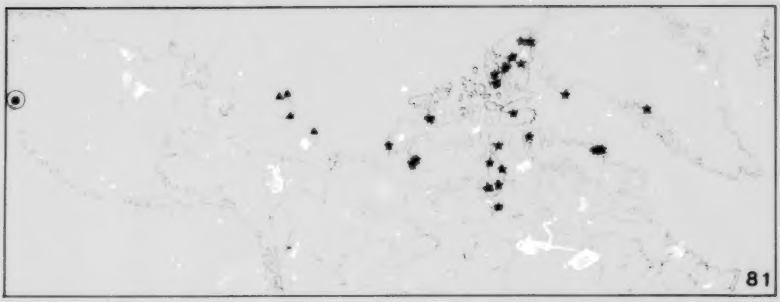


Map 81. Collection localities of *Alopecosa pulverulenta* (●), *A. exasperans* (★), and *A. mutabilis* (▲).

distal extension on prolateral side; tip of median apophysis with stout mesally directed tooth; hood with single rectangular cavity; copulatory tubes tortuous; and spermathecae minute. The occurrence of *A. pulverulenta* in North America is based on a single female collected in the Aleutian Islands and described by Fox (1940). Further collecting is needed to confirm the record.

Range. Attu Island, Aleutian Islands, Alaska; Europe, Asia.

Biology. Bristowe (1971) described the courtship of *A. pulverulenta*. Adults have been collected in April and throughout the summer in England (Locket and Millidge 1951).

Alopecosa exasperans (O. Pickard-Cambridge)

Figs. 514–520; Map 81

Tarentula exasperans O. Pickard-Cambridge, 1877:283, fig. 7 (pl. 8); Braendegaard 1960:8, figs. 2–4.

Alopecosa exasperans: Roewer 1954:225; Dondale and Redner 1979:1043, figs. 9, 10, 13, 34, 36–38.

Male. Total length 6.9–8.8 mm; carapace 3.66 ± 0.23 mm long, 2.82 ± 0.18 mm wide (20 specimens measured). Carapace with lateral areas nearly black; submarginal bands indicated by 2 or 3 indistinct spots. Chelicerae reddish brown. Sternum reddish brown to nearly black. Legs reddish brown to nearly black; femora and tibiae usually with 3 or 4 darker rings; femur I darker than others; distitarsi with irregular double row of short stout setae ventrally (Fig. 517). Abdomen with dark areas anteriorly at sides and with lateral spots;

spots in 3–5 pairs, alternating with clumps of white setae; spots sometimes joining to form chevrons (Fig. 519); heart mark black; venter reddish brown to black. Cymbium lacking macrosetae at tip; terminal apophysis with fine spur-like tip; tegulum lacking distal extension on prolateral side; embolus visible only at base; median apophysis angular, terminating in tooth; tooth angular, lacking minute denticle on retrolateral margin (Figs. 516, 518).

Female. Total length 7.1–10.3 mm; carapace 3.85 ± 0.17 mm long, 3.01 ± 0.18 mm wide (20 specimens measured). Coloration essentially as in male but generally paler. Carapace with submarginal bands broad and distinct. Legs sometimes lacking dark rings; distitarsi lacking double row of short stout setae. Epigynum lacking hood; median septum approximately triangular, wider than long; copulatory openings situated anterolaterally (Fig. 515). Copulatory tubes with thickened part arched; spermathecae bulbous, with up to 5 minute nodules (Figs. 514, 520).

Comments. Specimens of *A. exasperans* are distinguished by the following characteristics: terminal apophysis with fine spur-like tip; distitarsi of males with irregular double row of short stout setae ventrally; median apophysis with tip of tooth angular and lacking minute denticle on retrolateral margin; median septum broader than long; and copulatory tubes strongly arched.

Range. Canadian Arctic islands; northern and western Greenland.

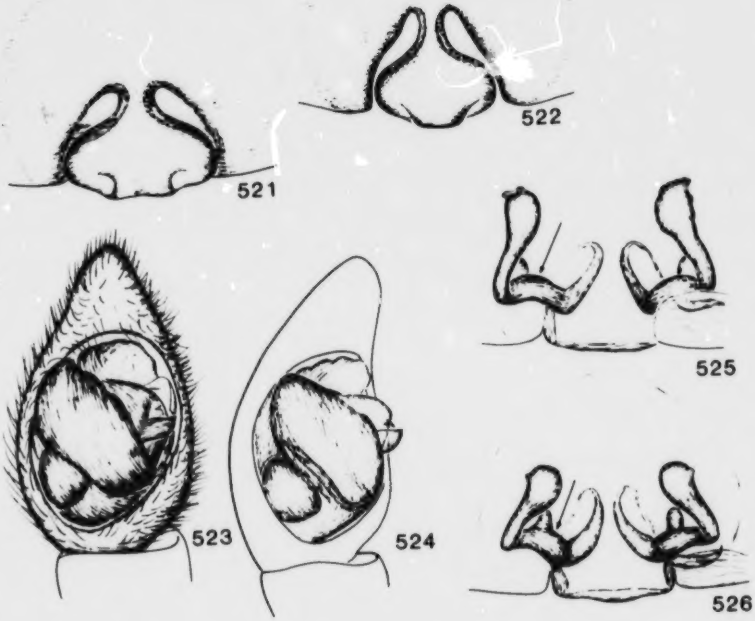
Biology. Leech (1966) reported the activities of adults of *A. exasperans* in full sun on dry southern or southwestern slopes on Ellesmere Island. Adult males and females have been collected from June to August, and egg sacs were recorded in July and early August.

Alopecosa mutabilis (Kulczyński)

Figs. 521–526; Map 81

Tarentula mutabilis Kulczyński, 1908:5, 85, figs. 96–101 (pl. 3).
Alopecosa mutabilis: Bonnet 1955:254; Dondale and Redner 1979:1044, figs. 11, 12, 39–42.

Male. Total length 7.3 mm; carapace 3.68 mm long, 2.71 mm wide (1 specimen measured). Carapace lacking submarginal bands; lateral areas dark reddish brown to nearly black. Chelicerae reddish brown. Sternum dark reddish brown. Legs reddish brown to nearly black; distitarsi with irregular double row of short stout setae



Figs. 521–526. Genitalia of *Alopecosa mutabilis*. 521, 522, epigynums, ventral view; 523, 524, palpus of male: 523, ventral view; 524, prolateroventral view; 525, 526, spermathecae, dorsal view.

ventrally. Abdomen with dark areas anteriorly at sides and spots posteriorly; spots black, oblique, in 4 pairs; heart mark black; venter reddish brown, with purplish tone. Cymbium lacking macrosetae at tip; terminal apophysis short, flat, pale, with dark margin and fine spur-like tip; tegulum lacking distal extension on prolateral side; embolus visible only at base; median apophysis angular, with tooth at tip; tooth spur-like, curving to single point with minute denticle (Figs. 523, 524).

Female. Total length 7.0–9.8 mm; carapace 3.45–3.89 mm long, 2.62–3.03 mm wide (4 specimens measured). Coloration essentially as in male. Carapace sometimes with submarginal bands. Legs sometimes with dark rings; distitarsi lacking irregular double row of short stout setae. Abdomen with paired dark marks sometimes joining to form long bands. Epigynum lacking hood; median septum approximately triangular, wider than long; copulatory openings situated anterolaterally (Figs. 521, 522). Copulatory tubes with thickened part nearly straight; spermathecae club-shaped, with 1–3 minute nodules (Figs. 525, 526).

Comments. Specimens of *A. mutabilis* are distinguished by the following characteristics: terminal apophysis with fine spur-like tip; distitarsi of males with irregular double row of short stout setae ventrally; median apophysis terminating in curving spur-like tooth; and thickened part of copulatory tubes nearly straight.

Range. Northern Alaska, Siberia.

Biology. Nothing is recorded.

Alopecosa pictilis (Emerton)

Figs. 527–533; Map 82

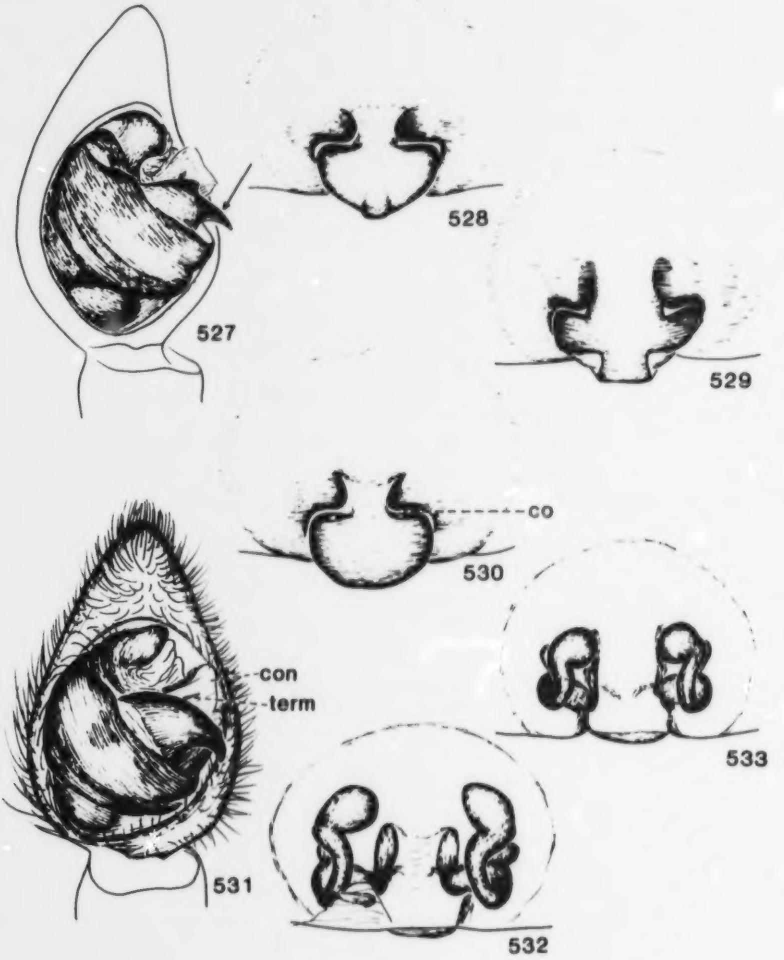
Lycosa pictilis Emerton, 1885:485, figs. 5, 5*a*, 5*b* (pl. 46); Chamberlin 1908:270, figs. 6, 8 (pl. 19).

Alopecosa pictilis: Bonnet 1955:255; Dondale and Redner 1979:1044, figs. 14, 15, 43–47.

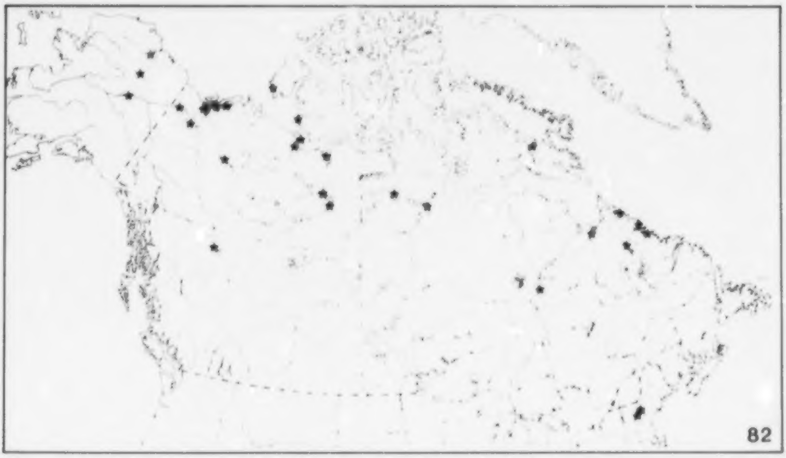
Male. Total length 7.2–9.9 mm; carapace 4.42 ± 0.41 mm long, 3.35 ± 0.29 mm wide (20 specimens measured). Carapace with few darker lines radiating from dorsal groove area; lateral areas dark reddish brown; submarginal bands faint or absent. Chelicerae reddish brown. Sternum reddish brown. Legs with femora reddish brown, sometimes with 2 or 3 dark rings; tibiae and tarsi yellowish brown. Abdomen orange with paired oblique black spots and anterolaterally with black areas (or abdomen mainly black; anterior area pale orange with paired spots; spots black, converging); heart mark absent; venter dark reddish brown. Cymbium lacking macrosetae at tip; terminal apophysis slender, pointed, well sclerotized; tegulum not extended distally on prolateral side; embolus visible only at base; median apophysis broad, curved; tip of median apophysis curved basally, hooked at tip (Figs. 527, 531).

Female. Total length 8.1–12.8 mm; carapace 4.46 ± 0.42 mm long, 3.31 ± 0.34 mm wide (25 specimens measured). Coloration essentially as in male. Carapace with submarginal bands, if present, often broken into series of spots. Leg segments uniform in color.

Heart mark sometimes present. Epigynum lacking hood; atrium slit-like, transverse; median septum tongue-shaped to nearly rectangular; copulatory openings transverse, at lateral ends of depression in median septum (Figs. 528–530). Copulatory tubes with slender part directed anteriorly; spermathecae with 3–7 minute blunt nodules (Figs. 532, 533).



Figs. 527–533. Genitalia of *Alopecosa pictilis*. 527, 531, palpus of male: 527, prolateroventral view; 531, ventral view; 528–530, epigynums, ventral view; 532, 533, spermathecae, dorsal view. *co*, copulatory opening; *con*, conductor; *term*, terminal apophysis.



Map 82. Collection localities of *Alopecosa pictilis*.

Comments. Specimens of *A. pictilis* are distinguished by the following characteristics: tegulum lacking distal extension on prolateral side of genital bulb; median apophysis with basally directed and hooked tooth; distitarsi of males lacking rows of short stiff setae ventrally; atrium slit-like; and copulatory openings transverse.

Range. Alaska to Labrador, with relict populations in the mountains of New Hampshire; Siberia.

Biology Emerton (1885) found specimens "among the moss and low shrubs" on Mount Washington, N.H. Adult males have been collected in June and July and adult females from June to August. Egg sacs were observed in late July.

Alopecosa hirtipes (Kulczyński)

Figs. 534–547; Map 80

Tarentula hirtipes Kulczyński, 1907:593, figs. 22, 27 (pl. 21).

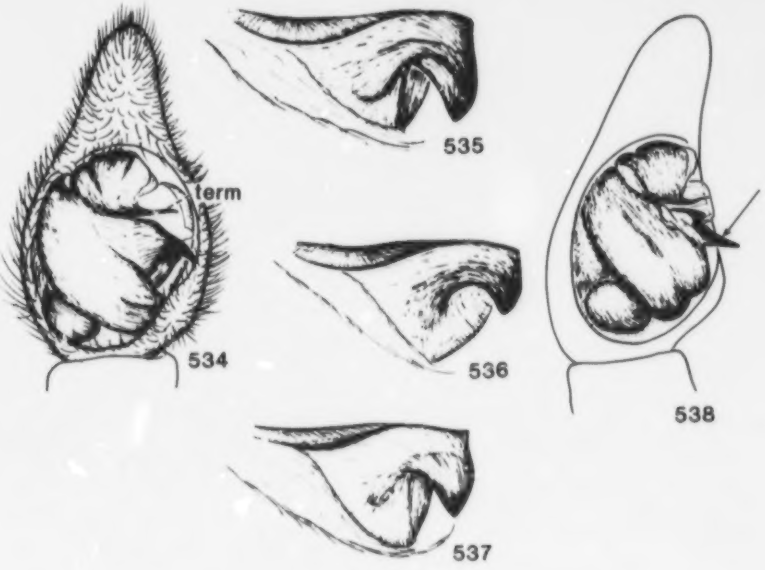
Alopecosa hirtipes: Roewer 1954:217; Dondale and Redner 1979:1046, figs. 16, 18–21, 48–56.

Tarentula hirta Kulczyński, 1908:80, figs. 87, 88 (pl. 3).

Lycosa asivak Emerton, 1919:5H, figs. 13–16 (pl. 2).

Tarentula insolita: Jackson 1933:145, fig. 1 (pl. 1).

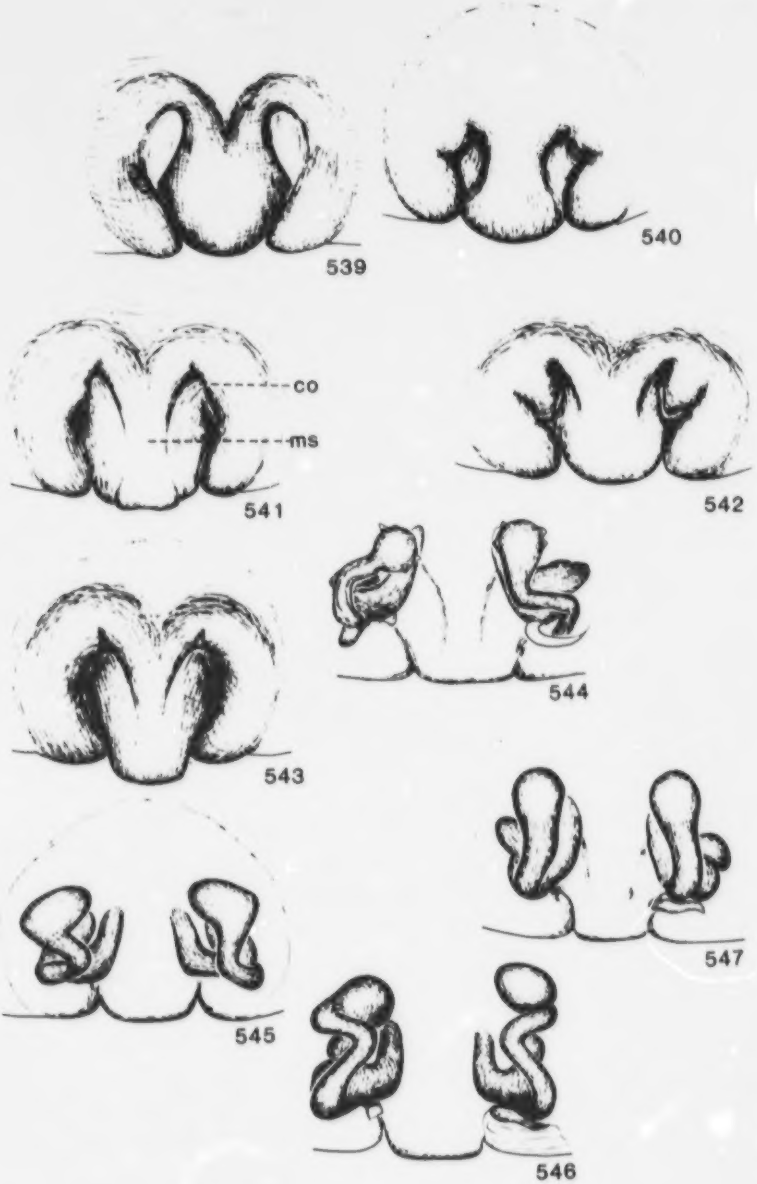
Tarentula hamiltoni Chamberlin and Ivie, 1947:23, fig. 91.



Figs. 534–538. Male palpus of *Alopecosa hirtipes*. 534, ventral view; 538, prolateroventral view; 535–537, median apophysis, distal view. *term*, terminal apophysis.

Male. Total length 8.9–11.2 mm; carapace 5.18 ± 0.24 mm long, 3.97 ± 0.17 mm wide (20 specimens measured). Carapace with few darker lines radiating from dorsal groove area; lateral areas dark reddish brown; submarginal bands represented by 2 or 3 small pale spots. Chelicerae reddish brown. Sternum reddish brown, sometimes with slender pale midband. Legs reddish brown, conspicuously hairy, lacking dark rings; femur I somewhat darker than femora II–IV. Abdomen mottled gray and black, with 6 or 7 slender chevrons; anterior lateral areas dark; heart mark usually absent; venter reddish brown, orangish brown, or gray. Cymbium lacking macrosetae at tip; terminal apophysis slender, pointed, nearly fully visible in ventral view; tegulum not extended distally on prolateral side of genital bulb; embolus visible only at base; median apophysis approximately triangular, with distal tooth; tooth slender, straight, directed ventrally (Figs. 534–538).

Female. Total length 10.2–14.1 mm; carapace 5.85 ± 0.33 mm long, 4.46 ± 0.25 mm wide (25 specimens measured). Coloration essentially as in male. Leg femora sometimes with 2 or 3 dark rings; tibiae with white ring at middle. Abdominal dorsum sometimes entirely gray. Epigynum lacking hood; median septum broad, tongue-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Figs. 539–547. Female genitalia of *Alopecosa hirtipes*. 539–543, epigynums, ventral view; 544–547, spermathecae, dorsal view. *co*, copulatory opening; *ms*, median septum.

shaped, convex at midline, depressed laterally; atrium slit-like; copulatory openings longitudinal or oblique (Figs. 539–543). Copulatory tubes often tortuous; spermathecae often club-shaped, with up to 7 minute nodules (Figs. 544–547).

Comments. Specimens of *A. hirtipes* are distinguished by the following characteristics: tegulum lacking distal extension; tooth of median apophysis straight, slender, ventrally directed; distitarsi of males lacking rows of short stiff setae ventrally; atrium slit-like; and copulatory openings longitudinal or oblique.

Range. Alaska to Labrador, Siberia.

Biology. Adult males and females have been recorded from June to August, and egg sacs from late June to mid August. Oughton (1939) described the burrows made by this spider in southern Baffin Island.

Family Pisauridae—nurseryweb spiders

The Pisauridae, or nurseryweb spiders, are generally regarded as semiaquatic. Although incapable of sustained life under water, they can pursue and capture prey among submerged mats of vegetation in ponds and lakes and the backwaters of rivers (Gertsch 1979); foraging among rocks and vegetation along shorelines is also common. In turn, they may be pursued under water by pompilid wasps (Roble 1985). Some have been reported to remain below the surface as long as 30 minutes (Bishop 1924; Carico 1973) or even longer (Gertsch 1979). They then emerge and feed, resting on some partly submerged object with the tips of their front legs lightly touching the water's surface. They prey on many kinds of aquatic insects, as well as occasional minnows and tadpoles.

During daylight hours, the spiders may spend considerable time motionless, with legs outspread and bodies pressed against rocks, tree trunks, logs, docks, or buildings. Their colors may closely match those of the substrate. If touched, the spiders usually whisk silently out of sight. If handled, they may bite, although the venom has only local effects that disappear in a few days or less. Nurseryweb spiders are the largest spiders found in Canada.

The common name for these spiders is derived from the special tent-like web that females spin to enclose their egg sacs. After carrying the egg sac about for a time by her chelicerae (Fig. 548), the female suspends it at the top of a shrub or a tall weed (Fig. 549) or among stones. The female stations herself on the outer wall of the nursery until the eggs hatch. The young may remain in a cluster for several days before leaving the nursery. If disturbed, hundreds of tiny gray spiders spread along the interior threads of the web like a "puff of smoke" (Bishop 1924).

Description. Total length 8.0–30.0 mm. Carapace longer than wide, rather flat, usually black to brown or gray, covered with short recumbent setae. Eyes in 2 rows; anterior row procurved, straight, or somewhat recurved; posterior row strongly recurved, well separated from anterior row; anterior eyes usually smaller than posterior eyes (Figs. 553, 561). Chelicerae large, powerful; retromargin with 3 or 4 teeth. Legs long, usually strong, usually held radially outward from body, with 3 claws; scopulae sparse; trochanters with deep notch. Abdomen ovoid, covered with short recumbent setae (some of which may be feathery). Male palpal tibia with retrolateral apophysis (Figs. 552, 560, 571); embolus usually long and hair-like, arising on small tough distensible sac; terminal apophysis arising on tegulum; terminal apophysis often large and fan-shaped, sometimes elongate and slender, sometimes concave and curved, or sometimes absent, usually functioning as conductor when present (Figs. 555, 565); median apophysis soft or sclerotized, variable in length, sometimes

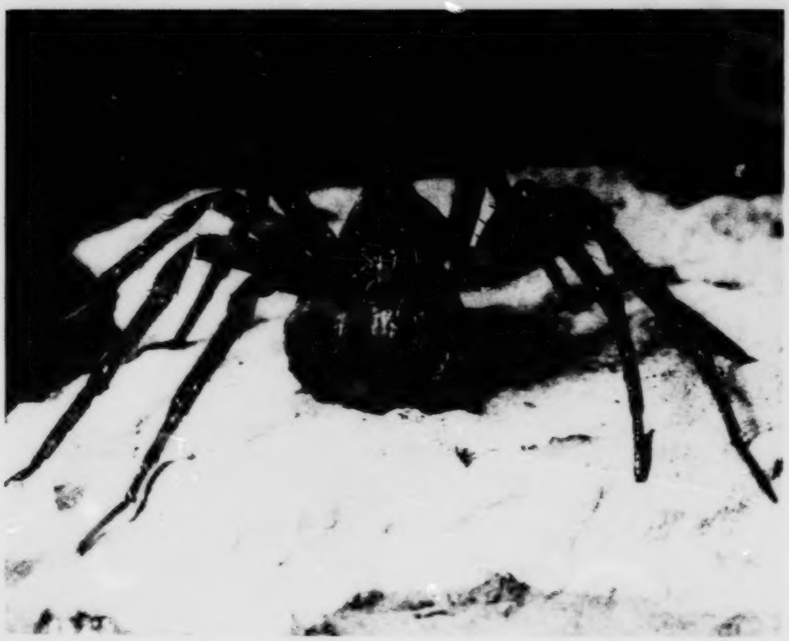


Fig. 548. *Dolomedes* sp. with egg sac.

grooved, sometimes functioning as conductor, rarely absent (Figs. 555, 565). Epigynum usually with large ovoid median septum (Figs. 557, 563, 570). Spermathecae variable (Figs. 554, 558, 564, 569).

Comments. Nurseryweb spiders are distinguished from members of the two related families, Lycosidae and Oxyopidae, by the following characteristics: posterior eyes arranged in single strongly recurved row and not conspicuously enlarged; carapace somewhat flattened; and base of embolus with small tough distensible sac. Females transport their egg sacs by the chelicerae and by a thread from the spinnerets (rather than by the spinnerets alone or by fastening them to twigs) and suspend the egg sacs in special tent-like nurseries. Unlike male wolf spiders, male nurseryweb spiders possess a well-developed tibial apophysis on the palpus. Their strong preference for permanent bodies of fresh water and their "fishing" behavior also distinguish most nurseryweb spiders from most wolf spiders, which tend to occupy ground habitats, and from the lynx spiders, which live in vegetation above ground. As with the wolf and lynx spiders, some representatives are web builders, for example *Euprosthenops* spp. of South Africa (Lawrence 1964) and *Architis* sp. (Nentwig 1985). In the latter genus, the female modifies her prey-catching web into a nursery for the

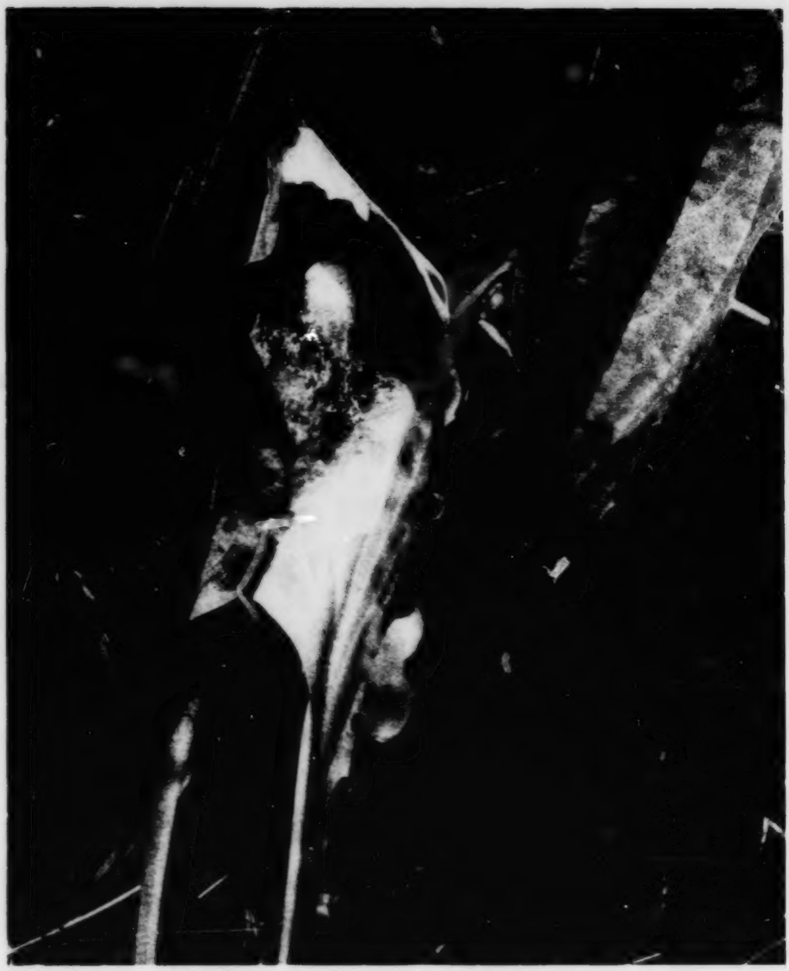


Fig. 549. *Pisaurina mira* female with egg sac in nursery web.

young. Some build webs for catching prey only in the early instars, for example *Pisaura* and *Pisaurina* (Lenler-Eriksen 1969, Carico 1985).

The nurseryweb spiders comprise a world fauna of 500 or more species. About 30 species are represented in North America. Two genera with seven species occur in Canada.

Key to genera of Pisauridae

1. Cheliceral retromargin with 3 teeth. Male with embolus arising basally on genital bulb (Figs. 552, 555). Female with copulatory tubes long, forming series of 2–4 tight loops (Figs. 550, 554) .... ***Pisaurina*** (p. 324)

Cheliceral retromargin with 4 teeth. Male with embolus arising distally on genital bulb (Figs. 560, 565, 571). Female with copulatory tubes shorter, not forming series of tight loops (Figs. 558, 564, 569) .... ***Dolomedes*** (p. 331)

Clé des genres de Pisauridae

1. Marge antérieure des chélicères ayant trois dents. Mâle avec embolus prenant son origine à la base marge antérieure bulbe génital (fig. 552, 555). Femelle ayant des tubes copulatoires longs, formant une rangée de deux à quatre boucles serrées (fig. 550, 554) ..... ***Pisaurina*** (p. 324)

Marge antérieure des chélicères ayant quatre dents. Mâle avec embolus prenant son origine à l'extrémité marge antérieure bulbe génital (fig. 560, 565, 571). Femelle ayant des tubes copulatoires plus courts, ne formant pas une rangée de boucles serrées (fig. 558, 564, 569)..........................
.... ***Dolomedes*** (p. 331)

Genus *Pisaurina* Simon

Members of the genus *Pisaurina* are in general less dependent on open water than most pisaurids. They are usually found wandering over the foliage of herbs and shrubs in woods and abandoned fields (Bishop 1924, Carico 1972). Both sexes may be collected by sweep nets, and males are sometimes caught in pitfall traps on the ground. Females may be found clutching egg sacs in silk-lined nurseries among leaves (Fig. 549).

Description. Total length 9.0–16.0 mm. Carapace highest at level of dorsal groove, usually with broad dark median band, sometimes with paired lateral white bands (Figs. 553, 556). Chelicerae with 3 retromarginal teeth. Legs with many long fine erect setae on tibiae and tarsi; femur I with 3 dorsal macrosetae, 4 or 5 prolaterals, 4–6 retrolaterals; tibia I with 2 dorsal macrosetae, 2 prolaterals, 2 retrolaterals, 4 pairs of ventrals; basitarsus I with no dorsal macrosetae, 3 prolaterals, 3 retrolaterals, 3 pairs of ventrals, and a single macroseta at tip. Abdomen rather high and truncate anteriorly, widest near middle, tapered posteriorly, usually with broad dark median band. Tibia of male palpus with broad flat ventral apophysis at tip and with prominent retrolateral apophysis near mid length (Figs. 552, 555); terminal apophysis arising near middle of genital bulb; terminal apophysis broad and fan-like distally, tapered to spine-like process on retrolateral side of bulb; embolus long, fine, arising prolaterally or basally on bulb and encircling it; median apophysis arising near middle of bulb, slender and pale at base, expanded and excised distally (Figs. 552, 555). Epigynum with plate divided by suture posteriorly; median septum ovoid; copulatory openings concealed and protected by elongate smooth sclerites lateral to median septum (Figs. 551, 557). Copulatory tubes long, arranged in tight oblique coils; spermathecae small, bulbous, located anterior to copulatory tubes (Figs. 550, 554).

Comments. Members of the genus *Pisaurina* are distinguished from those of the other genera of Pisauridae by the following characteristics: chelicerae with 3 retromarginal teeth; embolus arising basally or prolaterally on genital bulb and lacking flat rounded process at its base; and copulatory tubes long and tightly coiled.

The genus is represented only in eastern Canada, the eastern United States, and Cuba. It comprises four species (Carico 1972), two of which occur in Canada.

Key to species of *Pisaurina*

1. Abdominal median band dark, indistinct, or, if distinct, having lateral margins sinuous (Fig. 553). Legs long (ratio of length of patella and tibia I to length of carapace greater than 2.00 in males and usually greater than 1.40 in females). Males with base of embolus gradually narrowed; broad part of terminal apophysis abruptly narrowed (Fig. 552) .... ***mira* (Walckenaer)** (p. 326)

Abdominal median band dark, distinct, with lateral margins straight or nearly so (Fig. 556). Legs shorter (ratio of length of patella and tibia I to length of carapace less than 2.00 in males and usually less than 1.40 in females). Males with base of embolus abruptly narrowed; broad part of terminal apophysis gradually narrowed (Fig. 555) .... ***brevipes* (Emerton)** (p. 329)

Clé des espèces de *Pisaurina*

1. **Abdomen ayant une bande médiane foncée peu visible ,ou, si distincte, à marges latérales sinueuses (fig. 553). Pattes longues (rapport entre la longueur de la patelle et du tibia I et celle de la partie dorsale de l'encéphalo supérieur à 2,0 chez les mâles et en général supérieur à 1,40 chez les femelles). Mâles ayant la base de l'embolus se rétrécissant graduellement, et ayant la partie large de l'apophyse terminale se rétrécissant brusquement (fig. 552) .... *mira* (Walckenaer)** (p. 326)

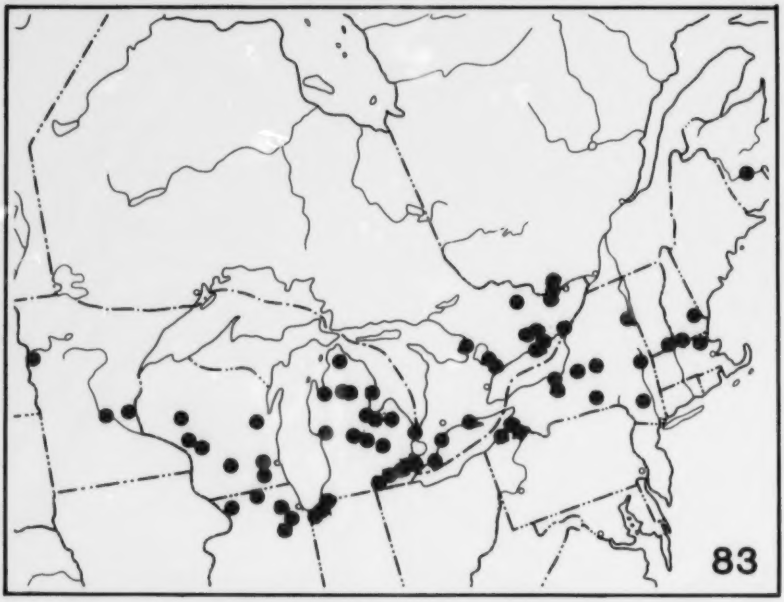
Abdomen ayant une bande médiane foncée distincte, à marges latérales droites ou à peu près droites (fig. 556). Pattes plus courtes (rapport entre la longueur de la patelle et du tibia I et la longueur de la partie dorsale de l'encéphalo inférieur à 2,00 chez les mâles et généralement inférieur à 1,40 chez les femelles). Mâles ayant la base de l'embolus se rétrécissant brusquement, et la partie large de l'apophyse terminale se rétrécissant graduellement (fig. 555) .... *brevipes* (Emerton) (p. 329)

Pisaurina mira (Walckenaer)

Figs. 550–553; Map 83

Dolomedes mirus Walckenaer, 1837:357.
Dolomedes virgatus Walckenaer, 1837:358.
Micrommata undata Hentz, 1847:192, fig. 7 (pl. 16).
Micrommata serrata Hentz, 1847:193, fig. 8 (pl. 16).
Micrommata marmorata Hentz, 1847:193, fig. 5 (pl. 17).
Micrommata carolinensis Hentz, 1847:194, fig. 9 (pl. 16).
Micrommata subinflata Hentz, 1850:288, fig. 13 (pl. 10).
Pisaurina mira: Simon 1898:295; Kaston 1948:296, figs. 960, 961 (pl. 48), 976, 977 (pl. 49), 2063 (pl. 131); Carico 1972:300, figs. 1–6, 13, 17, 18.
Pisaurina mira subinflata Bishop, 1924:25, figs. 1 (pl. 7), 6 (pl. 9); Kaston 1948:297, fig. 962 (pl. 48).
Pisaurina subinflata: Roewer 1954:122.

Male. Total length 11.59–14.06 mm; carapace 5.04–6.56 mm long, 3.90–4.47 mm wide (7 specimens measured). Carapace orange, usually with median band; median band broad, dark, extending entire length of carapace, including eye area. Chelicerae orange. Sternum pale orange. Legs orange, distally reddish or brownish; ratio of length of patella and tibia I to length of carapace 2.02–2.45.



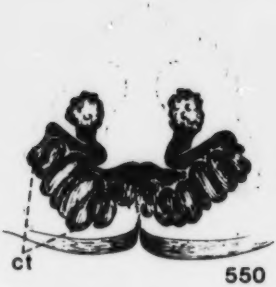
Map 83. Collection localities of *Pisaurina mira*.

Abdomen gray, with heart mark and median band; heart mark long, pale; median band distinct or indistinct, with posterior margins sinuous; setae white, forming paired patches; venter pale or dark gray. Palpal tibia with retrolateral apophysis short, truncate (Fig. 552); terminal apophysis abruptly narrowed to slender spine-like tip; embolus gradually narrowing at base (Fig. 552).

Female. Total length 14.16 ± 1.87 mm; carapace 5.54 ± 0.43 mm long, 4.65 ± 0.37 mm wide (11 specimens measured). Coloring essentially as in male (Fig. 553). Legs sometimes dull reddish and streaked with brown. Abdominal dorsum with lateral areas covered with dense white setae. Ratio of length of patella and tibia I to length of carapace 1.34–1.62. Epigynum with ovoid median septum; copulatory tubes forming small coils (Figs. 550, 551).

Comments. Specimens of *P. mira* are distinguished by the following characteristics: dorsum of abdomen with indistinct or distinct median band; median band, if distinct, laterally sinuous; legs relatively long; terminal apophysis abruptly narrowed; embolus with base narrowing gradually; and coils of copulatory tubes small.

Range. Minnesota to New Brunswick, south to Texas and central Florida.



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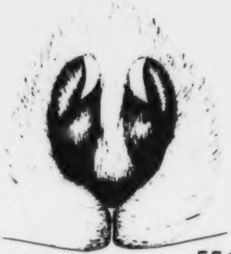

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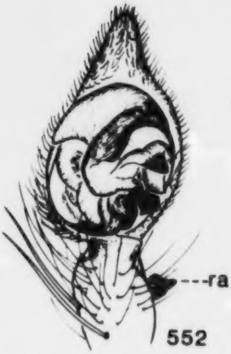

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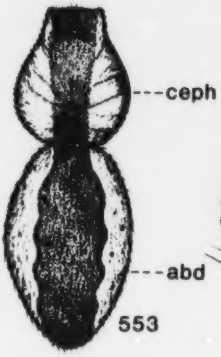

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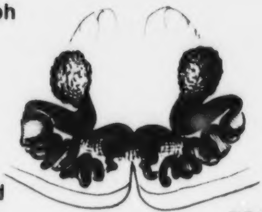

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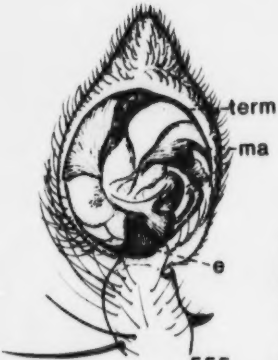

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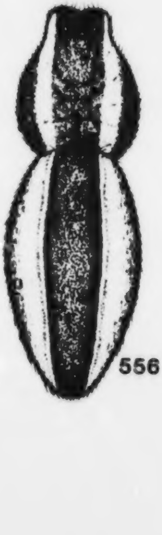

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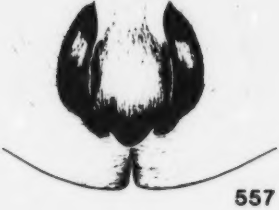

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Biology. Carico (1972) regards *P. mira* as one of the commonest spiders in eastern North America. Its principal habitats are woods, meadows, and abandoned fields. Mature males have been collected from February to November and mature females from March to November. In Canada maturity probably occurs from June to September. Egg sacs are observed mainly in June and July but appear from April to September according to latitude. Bishop (1924) indicates that the nursery is usually constructed before the eggs are laid, but females are sometimes seen carrying their egg sacs. The sac is suspended in foliage just before the eggs hatch. Bishop found that females kept in cages were able to construct dome-shaped nurseries of pure silk and that others utilized leaf-shaped pieces of paper arranged like the three leaflets of poison ivy.

Pisaurina brevipes (Emerton)

Figs. 554–557; Map 84

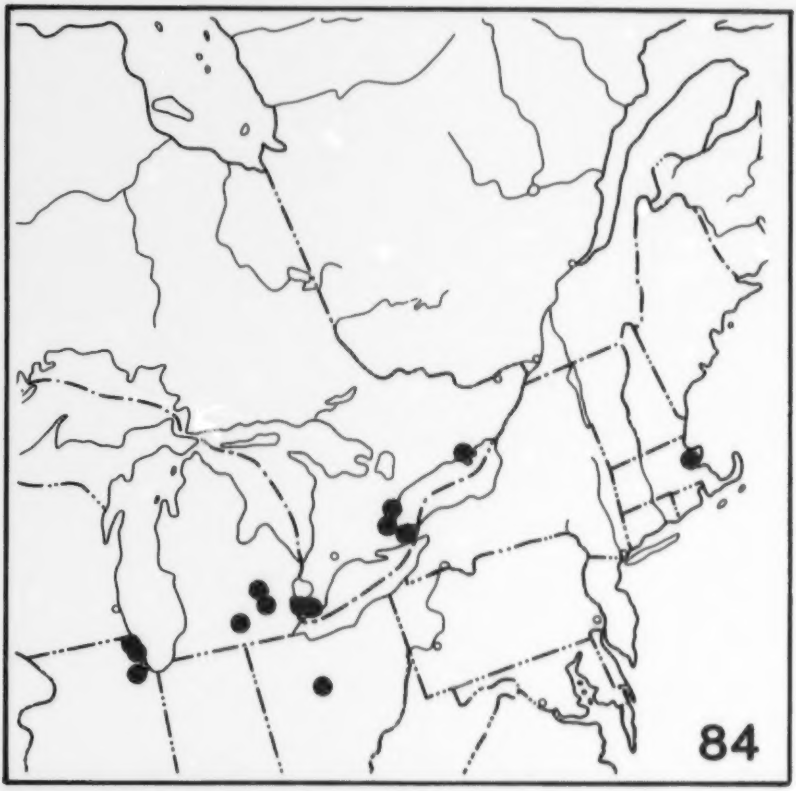
Pisaura brevipes Emerton, 1911:400, fig. 6 (pl. 4).

Pisaurina brevipes: Bishop 1924:29, figs. 2 (pl. 7), 5 (pl. 33); Kaston 1948:297, figs. 963 (pl. 48), 978 (pl. 49); Carico 1972:304, figs. 7, 8, 14, 19, 20.

Male. Total length approximately 9 mm; carapace 4.28 mm long, 3.6 mm wide (1 specimen measured). Carapace dark reddish brown, veined with black; submarginal bands pale, broad, paired, indicated by setae. Chelicerae pale orange, streaked with gray. Sternum brownish gray, paler at midline. Legs orange basally, yellowish or reddish distally; coxae and femora with few large gray speckles; ratio of patella and tibia length to carapace length 1.50. Abdomen with median band; median band broad, dark, with straight or nearly straight sides; venter reddish brown, sometimes with yellow midstripe. Tibia of palpus with oblique retrolateral apophysis (Fig. 555); terminal apophysis gradually narrowed toward tip; embolus base abruptly narrowed (Fig. 555).

Female. Total length 12.16–12.73 mm; carapace 4.75–5.13 mm long, 4.36–4.47 mm wide (2 specimens measured). Coloration as in male (Fig. 556). Epigynum with ovoid median septum; copulatory tubes in rather large coils (Figs. 554, 557).

Figs. 550–557. Structures of *Pisaurina* spp. 550–553, *P. mira*. 550, spermathecae; 551, epigynum, ventral view; 552, palpus of male, ventral view; 553, body of female, dorsal view. 554–557, *P. brevipes*. 554, spermathecae; 555, palpus of male, ventral view; 556, body of female, dorsal view; 557, epigynum, ventral view. *abd*, abdomen; *ceph*, cephalothorax; *ct*, copulatory tubes; *e*, embolus; *ma*, median apophysis; *ra*, retrolateral apophysis; *term*, terminal apophysis.



Map 84. Collection localities of *Pisaurina brevipes*.

Comments. Specimens of *P. brevipes* are distinguished by the following characteristics: abdominal band distinct, with straight or nearly straight lateral margins; legs relatively short; terminal apophysis gradually narrowed; embolus abruptly narrowed; and copulatory tubes in relatively large coils.

Range. Michigan and southern Ontario to Massachusetts, south to Arkansas, Louisiana, and central Florida.

Biology. Most collections of *P. brevipes* come from bogs, swamps, or wet ditches. Mature males were collected in March and May and mature females from mid March to November.

Genus *Dolomedes* Latreille

Members of the genus *Dolomedes* are medium to large in size, with rather flattened mottled bodies and long legs (Fig. 548). They are usually found near bodies of fresh water and run rapidly over the water's surface. At rest, they often sit motionless on docks, stones, tree trunks, or other surfaces colored like their bodies; or they station themselves at the water's edge, with the 3 front pairs of legs lightly touching the water. Roland and Rovner (1983) showed that the latter position is a way of receiving chemical and vibratory signals from the water's surface. Many are capable of catching small fish, an activity that has earned them the epithet "fisher spiders" (Gertsch 1979).

Description. Total length 6.6–30.4 mm. Carapace highest at dorsal groove, reddish to black; margins dark; submarginal bands (if present) pale, covered with short dense setae. Chelicerae with 4 retromarginal teeth. Legs yellowish or reddish brown; dorsal areas sometimes with dark longitudinal bands; femur I with 3 dorsal macrosetae, 3–5 prolaterals, 4 or 5 retrolaterals; tibia I with 2 dorsal macrosetae (both bristle-like in *D. striatus*), 2 prolaterals, 2 retrolaterals, 4 pairs of ventrals; basitarsus I with no dorsal macrosetae, 3 prolaterals, 3 retrolaterals, 3 pairs of ventrals, and a single ventral at tip; femur IV of male sometimes with setaceous tubercle or cluster of stiff setae ventrally. Abdomen somewhat truncate anteriorly, widest near middle, usually tapered posteriorly; abdomen usually mottled or banded with black (or both), white, and gray. Male palpus with tibia as long as wide or longer; tibia with small pointed ventral apophysis at tip and with larger, strong retrolateral apophysis; terminal apophysis long, slender; tip of terminal apophysis trough-like, supporting distal part of embolus (thus functioning as conductor); embolus long, hair-like, with flat rounded process at base; embolus arising distally on genital bulb and oriented dorsoventrally; median apophysis long, slender at base, sometimes flat and expanded distally, usually flexible (Figs. 560, 565, 571, 577). Epigynum with large triangular plate; median septum large, ovoid or elliptical, with or without large paired cavities at sides; copulatory openings usually situated at sides of median septum, usually protected by long curved lateral sclerites (Figs. 559, 563, 570, 581). Copulatory tubes short, curved or loosely coiled; spermathecae small, smoothly expanded; spermathecal organ minute; fertilization tubes longer than copulatory tubes, often coiled (Figs. 558, 564, 569, 580).

Comments. Members of the genus *Dolomedes* are distinguished from those of other pisaurid genera by the following characteristics: 4 retromarginal teeth on the chelicerae; origin of the embolus at the distal end of the genital bulb; base of embolus with flat rounded process; copulatory tubes short, curved; fertilization tubes long.

The genus *Dolomedes* is represented widely in the Americas, Eurasia, Africa, and Australasia; more than 100 species have been described. Carico (1973) treats nine species in America north of Mexico, of which five occur in Canada and Alaska.

Key to species of *Dolomedes*

1. Male 2

Female 6

2(1). Median apophysis broad in basal half, narrower in distal half, distinctly bent (Fig. 560). Ratio of length of cymbium to length of palpal tibia greater than 2.7 .... ***tenebrosus*** **Hentz** (p. 335)

Median apophysis broad throughout (Fig. 582) or slender in basal half, broader in distal half, not distinctly bent (Figs. 565, 571, 577). Ratio of length of cymbium to length of palpal tibia less than 2.7 3

3(2). Femur IV with setaceous tubercle or cluster of stiff setae ventrally (Figs. 567, 573) 4

Femur IV without setaceous tubercle or cluster of stiff setae 5

4(3). Palpal tibia with retrolateral apophysis long, rounded at tip, and extending beyond tip of tibia (Fig. 565). Femur IV with setaceous tubercle ventrally (Fig. 567) .... ***triton*** **(Walckenaer)** (p. 337)

Palpal tibia with retrolateral apophysis shorter, pointed, not extending beyond tip of tibia (Fig. 571). Femur IV with cluster of stiff setae ventrally near tip (Fig. 573) .... ***vittatus*** **Walckenaer** (p. 339)

5(3). Palpal tibia with retrolateral apophysis tooth-like (Figs. 577, 579). Body not striped (Fig. 578) .... ***scriptus*** **Hentz** (p. 342)

Palpal tibia with retrolateral apophysis ridge-like (Figs. 582, 584). Body with pale longitudinal stripes (Fig. 583) .... ***striatus*** **Giebel** (p. 344)

6(1). Epigynum with large paired cavities at sides (Fig. 559) .... ***tenebrosus* Hentz** (p. 335)

Epigynum lacking large cavities at sides (Figs. 563, 570, 576, 581) 7

7(6). Median septum distinctly turned inward at posterior end (Fig. 564) .... ***triton* (Walckenaer)** (p. 337)

Median septum not turned inward at posterior end 8

8(7). Carapace (and abdomen) with distinct pale submarginal bands (Fig. 583) .... ***striatus* Giebel** (p. 344)

Carapace with indistinct pale submarginal bands or none (Figs. 572, 578) 9

9(8). Dorsum of abdomen usually uniform in color, with series of small paired white spots (Fig. 572) .... ***vittatus* Walckenaer** (p. 339)

Dorsum of abdomen with complex pattern including W-shaped marks, without paired white spots (Fig. 578) .... ***scriptus* Hentz** (p. 342)

Clé des espèces de *Dolomedes*

1. Mâle 2

Femelle 6

2(1). Apophyse médiane large dans la moitié basale, plus étroite à l'extrémité, distinctement courbée (fig. 560). Rapport entre la longueur du cymbium et la longueur du tibia du palpe supérieur à 2,7 .... ***tenebrosus* Hentz** (p. 335)

Apophyse médiane large en son entier ou grêle dans la moitié basale, plus large à l'extrémité, non distinctement courbée (fig. 565, 571, 577), ou large partout (fig. 582). Rapport entre la longueur du cymbium et la longueur du tibia du palpe inférieur à 2,7 3

3(2). Fémur IV avec tubercule poilu ou groupe de soies rigides sur le ventre (fig. 567, 573) 4

Fémur IV sans tubercule poilu ou groupe de soies rigides 5

4(3). Tibia du palpe ayant une apophyse côté arrière longue, arrondie à l'extrémité, se prolongeant plus loin que l'extrémité du tibia (fig. 565). Fémur IV ayant tubercule poilu sur le ventre (fig. 567) .... ***triton* (Walckenaer)** (p. 337)

Tibia du palpe ayant une apophyse côté arrière plus courte, pointue, ne se prolongeant pas jusqu'à l'extrémité du tibia (fig. 571). Fémur IV pourvu d'un groupe de soies rigides sur le ventre près de l'extrémité (fig. 573) .... ***vittatus* Walckenaer** (p. 339)

5(3). Tibia du palpe ayant une apophyse côté arrière en forme de dent (fig. 577, 579). Corps sans bandes (fig. 578) .... ***scriptus* Hentz** (p. 342)

Tibia du palpe ayant une apophyse côté arrière en forme de strie (fig. 582, 584). Corps ayant des bandes pâles longitudinales (fig. 583) .... ***striatus* Giebel** (p. 344)

6(1). Épigyne ayant des paires de grosses cavités sur les côtés (fig. 559) .... ***tenebrosus* Hentz** (p. 335)

Épigyne sans grosses cavités sur les côtés (fig. 563, 570, 576, 581) 7

7(6). Septum médian distinctement plié vers l'intérieur à l'extrémité postérieure (fig. 564) .... ***triton* (Walckenaer)** (p. 337)

Septum médian non plié vers l'intérieur à l'extrémité postérieure 8

8(7). Partie dorsale de l'encéphalo (et abdomen) ayant des bandes submarginales distinctes (fig. 583) .... ***striatus* Giebel** (p. 344)

Partie dorsale de l'encéphalo sans bandes submarginales ou avec bandes indistinctes (fig. 572, 578) 9

9(8). Partie dorsale de l'abdomen ayant deux séries de petites taches blanches superposées sur fond uniforme (fig. 572) .... ***vittatus* Walckenaer** (p. 339)

Partie dorsale de l'abdomen sans séries de taches blanches, avec dessin complexe (incluant des signes en forme de W (fig. 578)) .... ***scriptus* Hentz** (p. 342)

Dolomedes tenebrosus Hentz

Figs. 558–562; Map 85

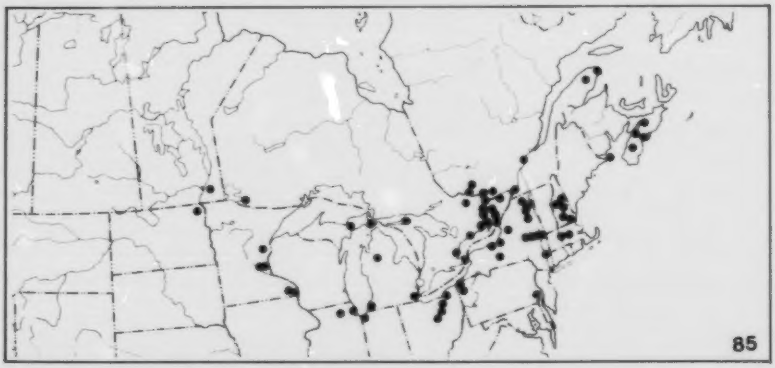
Dolomedes tenebrosus Hentz, 1844:396, figs. 10–13 (pl. 19); Kaston 1948:300, figs. 967–969 (pl. 48), 993, 994 (pl. 50); Carico 1973:454, figs. 3, 4, 25, 40, 53, 54.

Dolomedes idoneus Montgomery, 1902:588, fig. 51 (pl. 30).

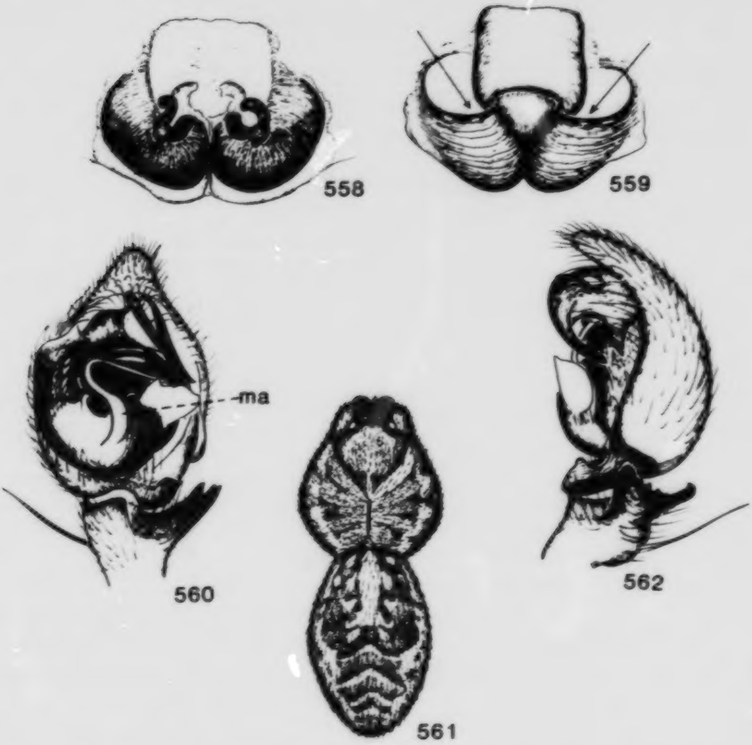
Dolomedes vernalis Emerton, 1909:211, figs. 7, 7*d* (pl. 7).

Male. Total length 6.65–11.87 mm; carapace 3.32–5.20 mm long, 2.85–4.73 mm wide (6 specimens measured). Carapace dark gray, with widening dark lines radiating from dorsal groove area; margins darker; submarginal bands usually present, pale, irregular, sometimes represented by series of spots. Chelicerae dark reddish brown, with longitudinal gray band. Sternum gray, often with pale midband. Legs gray, paler ventrally, often with indistinct dark rings; coxae often with large dark spots ventrally. Abdomen dark gray to brownish, occasionally blackish, with 3 or 4 thick chevrons or W-shaped marks; heart mark pale; venter pale, gray, or brownish; bands on venter pale, paired, indistinct, longitudinal. Tibia of palpus approximately as long as wide; retrolateral apophysis large, toothed, arising on broad base (Figs. 560, 562); ratio of length of cymbium to length of palpal tibia 2.9–3.3 (based on 13 specimens) (Carico 1973); median apophysis long, broad in basal half and slender distally, distinctly bent (Fig. 560).

Female. Total length 19.99 ± 3.06 mm; carapace 8.93 ± 1.23 mm long, 7.55 ± 0.77 mm wide (20 specimens measured). Coloration (Fig. 561) as in male. Epigynal median septum broad, with large paired cavities at sides (Fig. 559). Copulatory tubes short, sinuous; spermathecae small, sac-like (Fig. 558).



Map 85. Collection localities of *Dolomedes tenebrosus*.



Figs. 558–562. Structures of *Dolomedes tenebrosus*. 558, spermathecae, dorsal view; 559, epigynum, ventral view; 560, 562, palpus of male: 560, ventral view; 562, retrolateral view; 561, body of female, dorsal view. *ma*, median apophysis.

Comments. Specimens of *D. tenebrosus* are distinguished by the following characteristics: body large; median apophysis basally broad, distally slender, and angled; palpal tibia short; and median septum with large paired cavities at sides.

Range. Southern Manitoba to Nova Scotia; south to Texas and northern Florida.

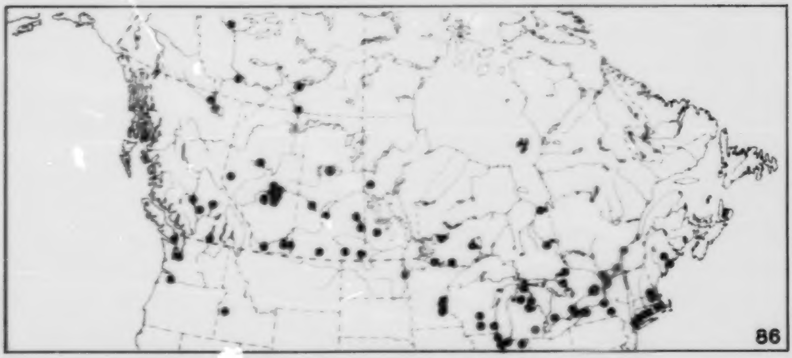
Biology. The usual habitats of *D. tenebrosus* are the margins of swamps, ponds, and lakes, where the spiders may be seen motionless on tree trunks, rocks, or docks. Some enter cottages and houses, sometimes straying quite far from water. The females are among the largest spiders in Canada, and with *D. scriptus*, are responsible for many appeals for information by alarmed members of the public. Adults have been collected from May to September and egg sacs from June to August. Kaston (1948) reported an egg sac containing 1393 eggs.

Dolomedes triton (Walckenaer)

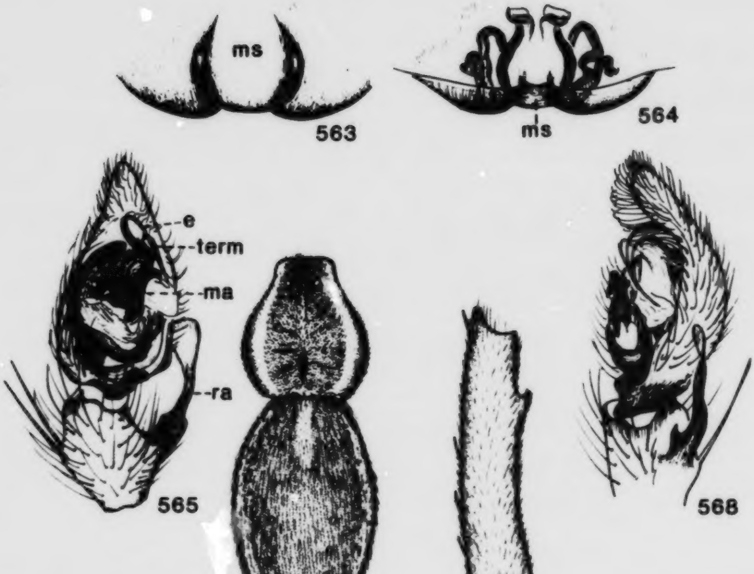
Figs. 563–568; Map 86

Lycosa triton Walckenaer, 1837:340.
Dolomedes sexpunctatus Hentz, 1845:191, figs. 5, 6 (pl. 16).
Dolomedes scapularis C.L. Koch, 1848:119, fig. 1358.
Dolomedes major Banks, 1898:276, fig. 5 (pl. 17).
Dolomedes triton: Petrunkevitch 1910:219; Carico 1973:482, figs. 11, 18, 19, 33, 37, 48, 69, 70.
Dolomedes triton triton: Bishop 1924:50, (pls. 27, 28), figs. 1–4.
Dolomedes triton sexpunctatus: Bishop 1924:52, figs. 1, 2 (pl. 29); Kaston 1948:300, figs. 970, 971 (pl. 48), 979–981 (pl. 49).
Dolomedes albiclavus Bishop, 1924:56, fig. 4 (pl. 32).
Dolomedes spatulatus Chamberlin and Ivie, 1946:6, fig. 5.

Male. Total length 9.52 ± 1.54 mm; carapace 5.15 ± 1.02 mm long, 4.33 ± 0.60 mm wide (13 specimens measured). Carapace greenish gray to tan, with several indistinct dark bands radiating from dorsal groove area; margins dark; submarginal bands white, extending entire length of carapace. Chelicerae pale to dark reddish brown, with dark longitudinal lines. Sternum pale, with dark lateral bands or series of spots. Legs pale, with irregular gray lines dorsally; femur IV with setaceous tubercle ventrally (Fig. 567). Abdomen pale brown to dark reddish brown, with series of small paired white spots; abdomen posterior, with indistinct dark transverse bands; heart mark pale; venter pale, with indistinct dark longitudinal bands. Tibia of palpus longer than wide, with pointed ventral apophysis at tip; retrolateral apophysis long, rounded, slender basally, expanded distally (Figs. 565, 568); ratio of length of cymbium to length of palpal tibia 1.6–2.6 (based on 59 males) (Carico 1973); median apophysis slender in basal half, broader in distal half, not bent (Fig. 565).



Map 86. Collection localities of *Dolomedes triton*.



Figs. 563–568. Structures of *Dolomedes triton*. 563, epigynum, ventral view; 564, spermathecae, dorsal view; 565, 568, palpus of male: 565, ventral view; 568, retrolateral view; 566, body of female, dorsal view; 567, femur IV of male, retrolateral view. *e*, embolus; *ma*, median apophysis; *ms*, median septum; *ra*, retrolateral apophysis; *term*, terminal apophysis.

Female. Total length 16.63 ± 2.73 mm; carapace 7.38 ± 1.00 mm long, 6.30 ± 0.83 mm wide (20 specimens measured). Coloration as in male (Fig. 566). Epigynal median septum convex at sides (Fig. 563), distinctly turned inward at posterior end. Copulatory tubes rather short, curved; spermathecae small, sac-like; fertilization tubes long, coiled (Fig. 564).

Comments. Specimens of *D. triton* are distinguished by the following characteristics: femur IV of male with setaceous tubercle ventrally; median apophysis basally slender and distally broad; ratio of cymbium length to palpal tibia length less than 2.7; retrolateral apophysis long and rounded; and median septum lacking paired cavities at sides, turned inward.

Range. Southern Alaska to Maine, south to southern Mexico and Cuba.

Biology. Individuals of *D. triton* are most often found on or at the margins of ponds, lakes, and the quiet parts of rivers and streams. They dive and hunt from emergent water plants and masses of floating vegetation (Bleckmann and Rovner 1984, Bleckmann and Barth 1984, Bleckmann and Bender 1987). Deshefy (1981) described so-called sailing by this spider, and Roland and Rovner (1983) described responses both to water-borne prey and to mate signals in males. Adults appear from late May or early June to September and egg sacs from July to September.

Dolomedes vittatus Walckenaer

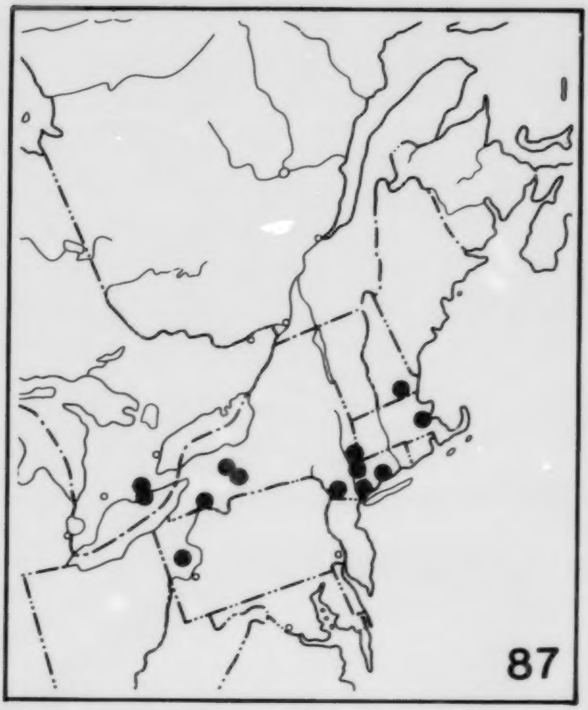
Figs. 569–574; Map 87

Dolomedes vittatus Walckenaer, 1837:347; Kaston 1948:301, figs. 973, 974 (pl. 48), 995 (pl. 50); Carico 1973:474, figs. 14, 15, 30, 45, 63, 64.

Dolomedes lanceolatus Hentz, 1845:191, fig. 12 (pl. 17).

Dolomedes urinator Hentz, 1845:190, fig. 3 (pl. 16); Kaston 1948:302, figs. 975 (pl. 48), 996 (pl. 50).

Male. Total length 18.53 mm; carapace 12.16 mm long, 8.65 mm wide (1 specimen measured). Carapace orange to brownish, with 2 small wedge-shaped marks anterior to dorsal groove; submarginal bands broad, yellowish, at front and sides of carapace. Chelicerae pale orange to dark reddish brown, with gray longitudinal lines. Sternum pale orange or gray. Legs orange to brownish orange, sometimes reddish distally, usually paler and mottled with gray ventrally; femur IV with cluster of long dark setae ventrally (Fig. 573). Abdomen gray on posterior two-thirds, paler anteriorly and at lateral margins, and with several pairs of small white spots; venter dull yellow or light brown. Tibia of palpus longer than wide, with 2 apophyses; ventral apophysis pointed, asymmetrical; retrolateral apophysis prominent, curved, with 2 spurs at base (Figs. 571, 574); ratio of length of cymbium to length of palpal tibia 1.6–1.9 (based on

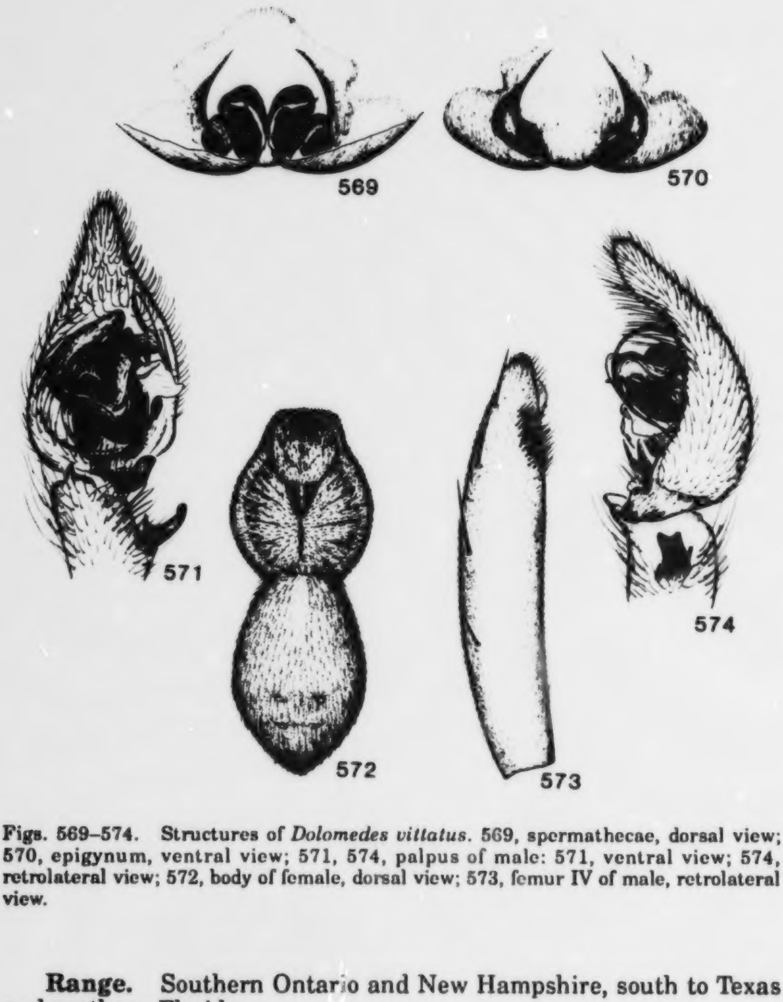


Map 87. Collection localities of *Dolomedes vittatus*.

12 males) (Carico 1973); median apophysis slender at base, expanded distally (Fig. 571).

Female. Total length 19.00–22.80 mm; carapace 10.45–12.60 mm long, 9.39–9.93 mm wide (3 specimens measured). Coloration as in male (Fig. 572). Epigynal median septum large, laterally convex (Fig. 570). Copulatory tubes short; spermathecae small, sac-like; fertilization tubes long, coiled, looped (Fig. 569).

Comments. Specimens of *D. vittatus* are distinguished by the following characteristics: body large; median apophysis basally slender and distinctly expanded; ratio of length of cymbium to length of palpal tibia less than 2.7; retrolateral apophysis short and pointed; femur IV in males with cluster of stiff setae ventrally; and epigynum without paired cavities or internal fold.



Figs. 569–574. Structures of *Dolomedes vittatus*. 569, spermathecae, dorsal view; 570, epigynum, ventral view; 571, 574, palpus of male: 571, ventral view; 574, retrolateral view; 572, body of female, dorsal view; 573, femur IV of male, retrolateral view.

Range. Southern Ontario and New Hampshire, south to Texas and northern Florida.

Biology. Individuals of *D. vittatus* are usually found along small shaded streams, where they rest on driftwood, stones, or tree trunks. Mature specimens have been collected from late May to October and egg sacs from late July to September. Bishop (1924) and Kaston (1948) give egg counts of more than 1400 in individual sacs.

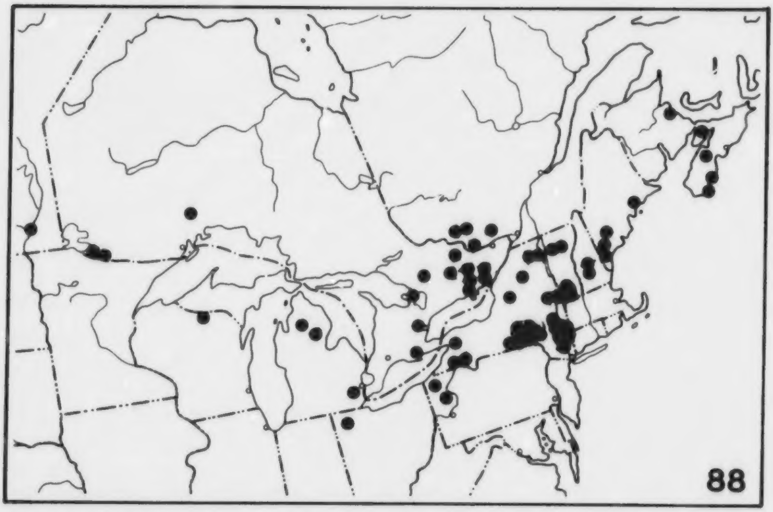
Dolomedes scriptus Hentz

Figs. 575–579; Map 88

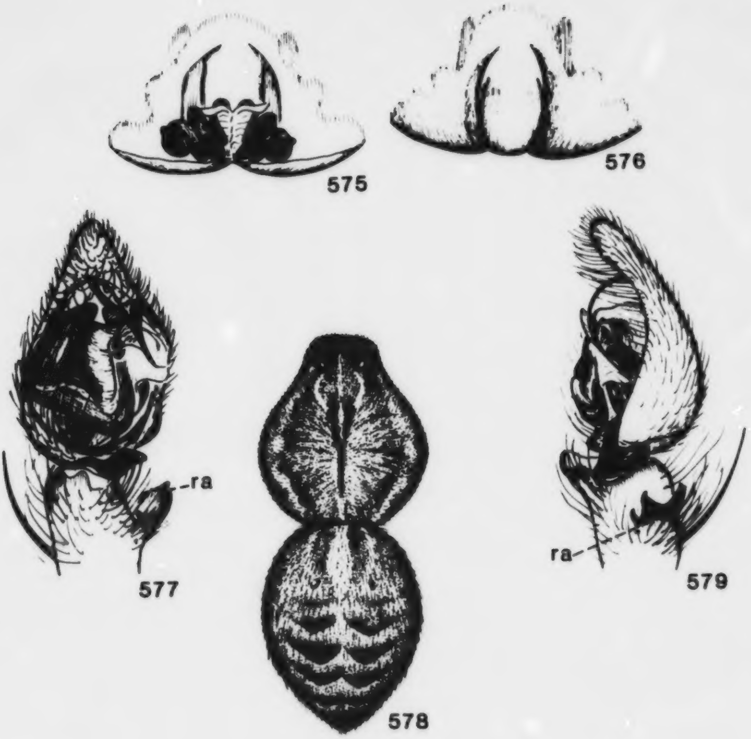
Dolomedes scriptus Hentz, 1845:189, fig. 1 (pl. 16); Kaston 1948:299, figs. 964–966 (pl. 48), 992 (pl. 50), 2061 (pl. 130), 2062 (pl. 131); Carico 1973:469, figs. 8–10, 22–24, 28, 43, 59, 60.

Dolomedes fontanus Emerton, 1885:502, fig. 10 (pl. 49).

Male. Total length 16.40 ± 1.26 mm; carapace 8.44 ± 0.81 mm long, 7.35 ± 0.71 mm wide (10 specimens measured). Carapace gray, with pair of small dark wedge-shaped marks anterior to dorsal groove and with slender dark lines radiating from dorsal groove area; submarginal bands pale, indistinct, sometimes represented by series of pale spots. Chelicerae reddish brown, with gray longitudinal band on anterior surface. Sternum gray, with irregular pale median band. Legs gray, paler ventrally, sometimes with indistinct dark rings. Abdomen pale, dark gray laterally; abdominal posterior with 3 or 4 W-shaped transverse bands; heart mark gray; venter pale gray, with indistinct dark longitudinal bands. Tibia of palpus longer than wide, with 2 apophyses; ventral apophysis truncate, situated at tip of palpal tibia; retrolateral apophysis broad, tooth-like (Figs. 577, 579); ratio of length of cymbium to length of palpal tibia 1.6–2.0 (based on 59 males) (Carico 1973); median apophysis slender basally, expanded distally (Fig. 577).



Map 88. Collection localities of *Dolomedes scriptus*.



Figs. 575–579. Structures of *Dolomedes scriptus*. 575, spermathecae, dorsal view; 576, epigynum, ventral view; 577, 579, palpus of male: 577, ventral view; 579, retrolateral view; 578, body of female, dorsal view. *ra*, retrolateral apophysis.

Female. Total length 20.69 ± 2.41 mm; carapace 9.78 ± 0.89 mm long, 8.42 ± 0.88 mm wide (20 specimens measured). Coloration as in male (Fig. 578). Epigynal median septum elongate, laterally convex (Fig. 576). Copulatory tubes short, curved; spermathecae small, sac-like; fertilization tubes long, coiled (Fig. 575).

Comments. Specimens of *D. scriptus* are distinguished by the following characteristics: body large; median apophysis basally slender and distally broad; ratio of length of cymbium to length of palpal tibial apophysis less than 2.7; male palpal tibia with tooth-like retrolateral apophysis; and epigynum with large paired cavities.

Range. Southern Manitoba to Nova Scotia, south to Texas and northern Florida.

Biology. Most individuals of *D. scriptus* were collected along moderately fast to fast streams, either on partly submerged stones or on piles of litter at stream margins. Adults have been collected from May to October and egg sacs from late June to October. Kaston (1936) described the mating behavior and reported (1948) a female guarding 567 spiderlings in her nursery web.

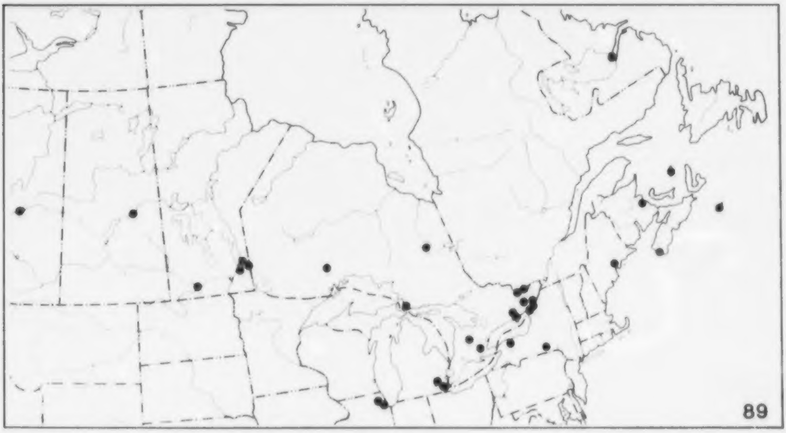
Dolomedes striatus Giebel

Figs. 580–584; Map 89

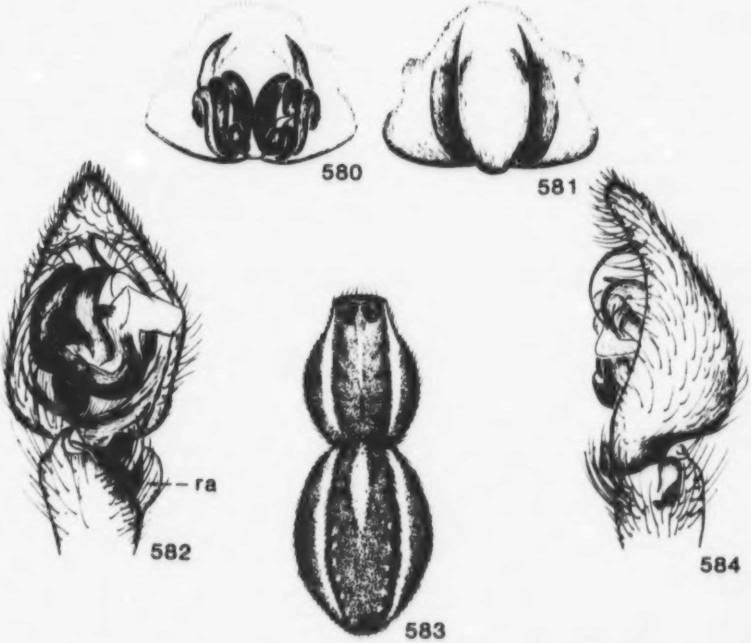
Dolomedes striatus Giebel, 1869:252; Kaston 1948:301, figs. 972 (pl. 48), 982 (pl. 49); Carico 1973:479, figs. 20, 21, 32, 47, 67, 68.

Dolomedes fulviatronotatus Bishop, 1924:59, figs. 3 (pl. 19), 1 (pl. 34).

Male. Total length 9.93 ± 1.45 mm; carapace 4.86 ± 0.57 mm long, 4.04 ± 0.40 mm wide (20 specimens measured). Carapace brownish, with several indistinct dark lines radiating from dorsal groove area; margins dark; submarginal bands pale, narrow, distinct. Chelicerae brownish. Sternum pale, with indistinct dark median band. Legs brownish; ventral areas indistinctly mottled; dorsal areas with few indistinct longitudinal marks. Abdomen brownish, with several pairs of small white spots; abdomen with slender pale submarginal bands; venter light brown, with indistinct dark longitudinal bands. Tibia of palpus longer than wide, with 2 apophyses; ventral apophysis small, hooked, situated at tip of palpal tibia; retrolateral apophysis flat, ridge-like (Figs. 582, 584); ratio of length of cymbium to length of palpal tibia 1.9–2.0 (based on 8 males) (Carico 1973); median apophysis rather broad throughout its length (Fig. 582).



Map 89. Collection localities of *Dolomedes striatus*.



Figs. 580–584. Structures of *Dolomedes striatus*. 580, spermathecae, dorsal view; 581, epigynum, ventral view; 582, 584, palpus of male: 582, ventral view; 584, retrolateral view; 583, body of female, dorsal view. *ra*, retrolateral apophysis.

Female. Total length 13.43 ± 2.43 mm; carapace 5.85 ± 0.67 mm long, 4.59 ± 0.51 mm wide (20 specimens measured). Coloration as in male (Fig. 583). Epigynal median septum long, broad (Fig. 581). Copulatory tubes short, curved; spermathecae small, sac-like; fertilization tubes looped and coiled (Fig. 580).

Comments. Specimens of *D. striatus* are distinguished by the following characteristics: male palpal tibia with ridge-like retrolateral apophysis; epigynal median septum long, broad; and carapace and abdomen with slender distinct pale submarginal bands.

Range. Alberta to Labrador, south to Illinois and Virginia.

Biology. The usual habitats of *P. striatus* are marshy ground and the margins of small ponds. One specimen was collected under litter on a sea beach. Adults were collected from late May to early autumn (also in winter in the southern parts of the range). Egg sacs have been observed in June, August, and September (Carico 1973).

Family Oxyopidae—lynx spiders

The Oxyopidae, or lynx spiders, live mainly among the stems of tall grasses, herbs, woody shrubs, or trees. Some of the tropical representatives are web builders (Griswold 1983), but the Canadian members (at least in the adult stage) are true hunters. Lynx spiders use both "sit-and-wait" and "stalk-and-pounce" techniques. At times the spider remains motionless with its front legs drawn upward and backward and then strikes when the prey approaches. At other times the spider stalks its prey much as a cat does. In both techniques, eyesight plays an important part in hunting, and the prey is swept into a sort of basket formed by the spider's long front pairs of legs. When pursued, lynx spiders leap and run with great agility and precision.

These spiders have two distinctive features: the peculiar hexagonal arrangement of the eyes and (in most cases) the tapered and pointed abdomen. The legs lack the scopulae often found in hunting spiders; instead the legs may possess the long semierect macrosetae and accessory claws characteristic of many web-building spiders (Rovner 1980). The eggs are deposited in tough silken sacs and anchored firmly by guy lines to twigs and leaves; females remain with the sacs until the young emerge (Whitcomb 1962, Cutler et al. 1977).

Description. Total length 3.2–21.6 mm. Carapace longer than wide, usually high and nearly vertical in front. Eyes arranged approximately hexagonally; anterior row usually recurved; posterior row usually procurved; anterior median eyes smallest; anterior lateral eyes largest (Figs. 588, 594). Chelicerae long, tapered. Legs long, rather slender; leg macrosetae conspicuously elongated and semierect; scopulae absent; trochanters with shallow notch ventrally at tip; tarsi with 3 claws, the median claw much reduced. Abdomen broad in front, usually strongly tapered toward tip (Figs. 590, 593), with distinct colulus. Male palpal tibia with short stout retrolateral or ventral apophysis, or with both (Figs. 587, 595); cymbium large, often dark; embolus arising on prolateral margin of tegulum; embolus supported distally by terminal apophysis. Epigynum with sclerotized median septum; copulatory openings small, well separated (Figs. 585, 591).

Comments. Members of the family Oxyopidae have a unique appearance owing to the hexagonal arrangement of the eyes and to the (usually) strongly tapered abdomen and long semierect leg macrosetae.

The family comprises a world fauna of 11 genera with approximately 370 species (Brady 1964). Of these, 3 genera and 17 species occur in America north of Mexico. One genus and two species are found in Canada.

Genus *Oxyopes* Latreille

These spiders are usually found among the stems of woody plants such as pine, juniper, and sagebrush. Being diurnal, they are often seen moving about in full sunlight, and they seem to tolerate dry conditions. They spend the hours of darkness suspended by a thread of silk from the underside of a leaf. They can capture their prey in milliseconds (Cutler et al. 1977). One of the Asian members of the genus has been cultured and released for the biological control of a gall midge that attacks cypress forests in Japan (Kayashima 1961).

Description. Total length 2.9–8.7 mm. Carapace convex, nearly vertical at front and sides, approximately one-half as high as long, covered with setae; setae short, recumbent, scale-like, iridescent. Eyes arranged as in family description. Chelicerae with 1 promarginal and 1 retromarginal tooth. Femur I with 3 dorsal macrosetae, 2 prolaterals, 2 retrolaterals; tibia I with 2 dorsal macrosetae, 1 prolateral, 1 retrolateral, 2 pairs of ventrals (none apical); basitarsus I with no dorsal macrosetae, 3 prolaterals, 3 retrolaterals, 3 pairs of ventrals plus an unpaired ventral at tip. Abdomen usually strongly tapered toward tip and covered with setae; setae short, recumbent, iridescent. Male palpal tibia with short hard retrolateral or ventral apophysis, or with both (Figs. 587, 595). Epigynal median septum low and ridge-like or prominent and anteriorly directed (Figs. 585, 591). Spermathecae dark, bulbous (Figs. 586, 592).

Comments. Representatives of the genus *Oxyopes* are distinguished from those of the other oxyopid genera by the following characteristics: carapace with nearly vertical anterior and lateral margins; body covered with short scale-like recumbent iridescent setae; and chelicera with 1 promarginal and 1 retromarginal tooth. Females of the two species treated here are unique in that the epigynal median septum is anteriorly directed.

Species of the genus *Oxyopes* are found in the Americas, Europe, Africa, and Asia. Some 239 species have been cataloged. Brady (1964) revised the 12 species found in North America north of Mexico. Two species occur or are thought to occur in Canada.

Key to species of *Oxyopes*

1. Front of carapace with pair of slender black lines extending along anterior surfaces of chelicerae (Fig. 588). Femora I–III each with slender black line along ventral surface. Cymbium with conical prominence at base (Fig. 587). Epigynal median septum tapered; tip reflexed (Fig. 585) .... ***salticus*** **Hentz** (p. 349)

Front of carapace, chelicerae, and femora lacking black lines. Cymbium lacking conical prominence at base (Fig. 595). Median septum with tip broader, not reflexed (Fig. 591) .... ***scalaris*** **Hentz** (p. 352)

Clé des espèces d'*Oxyopes*

1. Partie antérieure de la partie dorsale de l'encéphalo ayant une paire de lignes grêles et noires s'étendant le long des surfaces antérieures des chélicères (fig. 588). Fémurs I–III ayant une ligne grêle et noire le long de la surface ventrale. Cymbium ayant une proéminence conique à sa base (fig. 587). Septum médian fuselé, plié à l'extrémité (fig. 585) .... ***salticus*** **Hentz** (p. 349)

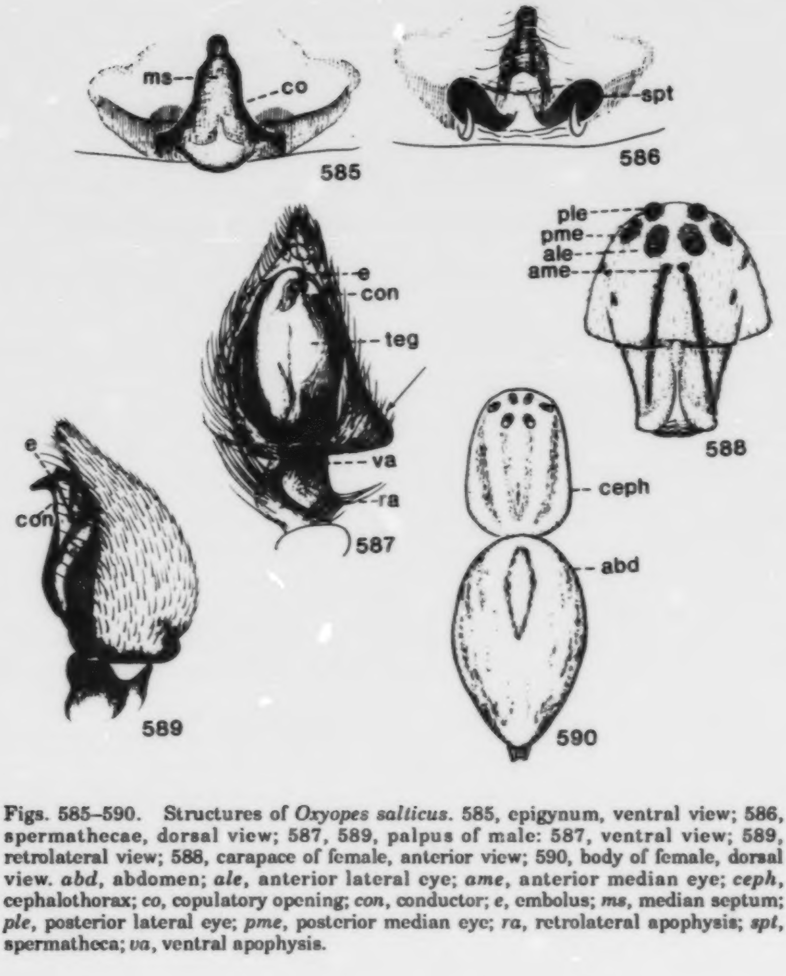
Partie antérieure de la partie dorsale de l'encéphalo, chélicères et fémurs sans lignes noires. Cymbium sans proéminence conique à sa base (fig. 595). Septum médian ayant l'extrémité plus large, non plié (fig. 591) .... ***scalaris*** **Hentz** (p. 352)

Oxyopes salticus Hentz

Figs. 585–590; Map 90

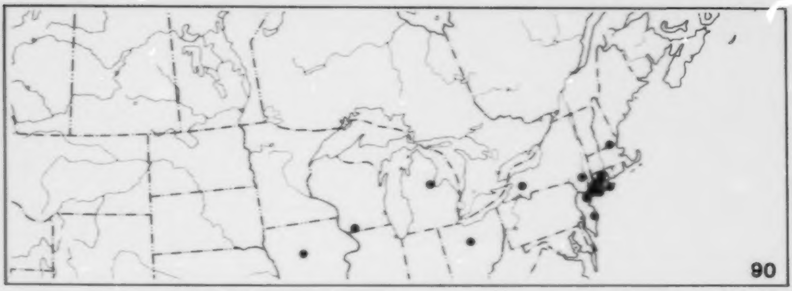
Oxyopes salticus Hentz, 1845:196, fig. 10 (pl. 16); Comstock 1940:668, fig. 733; Kaston 1948:339, figs. 1147, 1148 (pl. 59); Brady 1964:478, figs. 80–86, 91–96, 104, 105.
Oxyopes astutus Hentz, 1845:197, fig. 1 (pl. 17).

Male. Total length 4.25 ± 0.53 mm; carapace 2.19 ± 0.34 mm long, 1.71 ± 0.21 mm wide (16 specimens measured). Carapace orange mesally, somewhat darker laterally, with pair of short dark lines lateral to eye area; pair of slender black lines extending vertically from anterior median eyes along anterior surface of each chelicera (Fig. 588). Sternum dull orange, darkened at margins.



Figs. 585–590. Structures of *Oxyopes salticus*. 585, epigynum, ventral view; 586, spermathecae, dorsal view; 587, 589, palpus of male: 587, ventral view; 589, retrolateral view; 588, carapace of female, anterior view; 590, body of female, dorsal view. ***abd***, abdomen; ***ale***, anterior lateral eye; ***ame***, anterior median eye; ***ceph***, cephalothorax; *co*, copulatory opening; *con*, conductor; *e*, embolus; *ms*, median septum; *ple*, posterior lateral eye; *pme*, posterior median eye; *ra*, retrolateral apophysis; *spt*, spermatheca; *va*, ventral apophysis.

Chelicerae orange; anterior surfaces with slender black lines. Legs orange; femora I–III each with slender black line along ventral surface. Abdomen black or dark gray, mottled with dull yellow, sometimes off-white mesally and darker laterally; venter black to pale yellow. Tibia of palpus short, broad, irregular in outline, with ridge-like ventral apophysis and blunt retrolateral apophysis (Figs. 587, 589); cymbium large, dark, with sparse covering of black semierect setae; cymbium with large conical prominence



Map 90. Collection localities of *Oxyopes salticus*.

retrolaterally at base (Fig. 587); tegulum elongate, rather narrow; conductor slender, flattened, curved at tip (Figs. 587, 589); embolus arising prolaterally near tip of tegulum; embolus curved ventrally at tip, resting on conductor (Figs. 587, 589).

Female. Total length 5.69 ± 1.06 mm; carapace 2.40 ± 0.29 mm long, 1.78 ± 0.34 mm wide (15 specimens measured). Color as in male, but scale-like setae on carapace may form paired longitudinal bands (Fig. 590). Abdomen usually paler than in male. Epigynal median septum tapered, anteriorly directed, with tip reflexed (Fig. 585); copulatory openings located within cavity formed by convex median septum. Copulatory tubes short, broad, essentially straight; spermathecae moderately large, smooth, bulbous (Fig. 586).

Comments. Individuals of *O. salticus* are distinguished from those of the other species in the genus in Canada by the following characteristics: carapace and legs with black lines; embolus situated distally; median septum tapered and reflexed; and copulatory tubes essentially straight.

Range. Oregon to South America; Nebraska to New Hampshire, south to Florida.

Biology. Adults of *O. salticus* have been collected from March to September. Individuals can sometimes be collected in great numbers by sweep nets in tall grass and weeds. Young and Lockley (1985) reviewed the literature pertaining to the activity and abundance of this spider in row crops in the United States.

Oxyopes scalaris Hentz

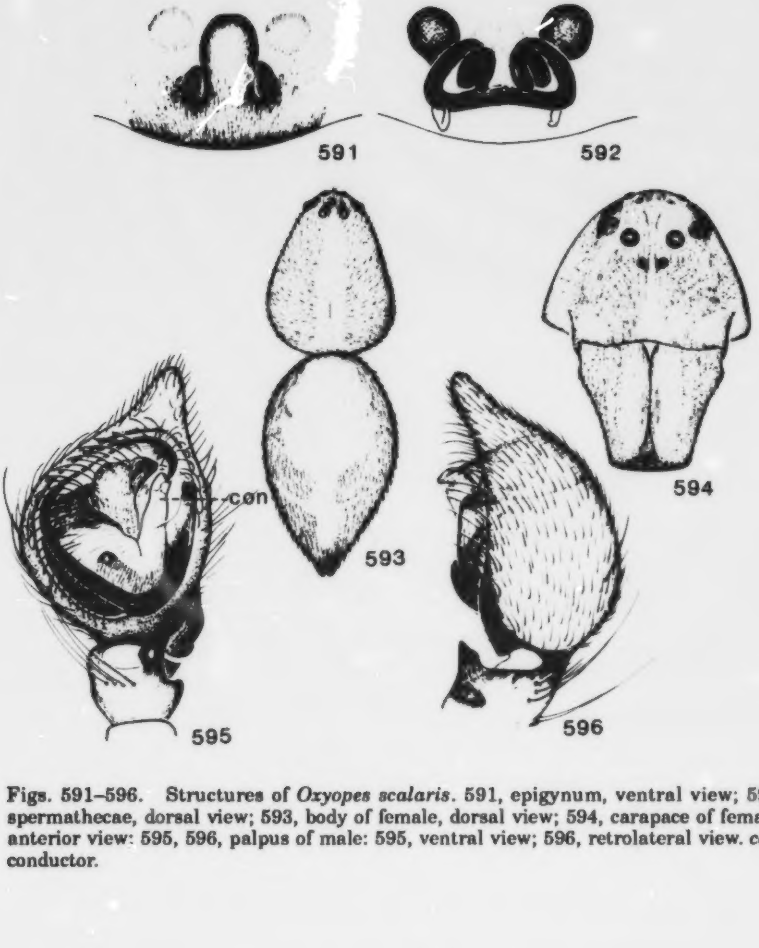
Figs. 591–596; Map 91

Oxyopes scalaris Hentz, 1845:196, fig. 4 (pl. 17); Comstock 1940:688; Kaston 1948:340, fig. 1149 (pl. 59); Brady 1964:484, figs. 87–90, 97–99, 106, 107.
Oxyopes cinerea Banks, 1893:133.
Oxyopes rufipes Banks, 1893:133.
Oxyopes compacta Banks, 1896*a*:72.
Oxyopes pictipes Banks, 1901:587.
Oxyopes laminatus Tullgren, 1901:24, fig. 14 (pl. 1).
Oxyopes classicus Chamberlin, 1925*b*:126, fig. 38.
Oxyopes tanneri Chamberlin, 1928:95.

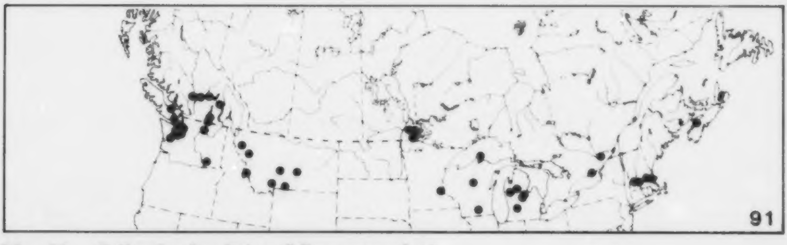
Male. Total length 5.22–7.36 mm; carapace 2.40–3.24 mm long, 1.84–2.42 mm wide (8 specimens measured). Carapace orange, often darker laterally; eye area sometimes black. Sternum pale yellow or pale orange, sometimes darker at margins. Chelicerae orange or dull red. Legs dull orange, sometimes smudged with black. Abdomen dull yellow or off-white mesally, dark brown laterally, with paired pale oblique streaks; or abdomen mottled with dull red and black; venter dull red or dull orange, sometimes with broad dark mesal band. Tibia of palpus short, broad, with 3 short hard retrolateroventral apophyses (Fig. 595); cymbium large, dark, with sparse covering of dark semierect setae; cymbium with blunt prominence retrolaterally at base; tegulum rounded, convex; conductor slender (Fig. 595); embolus arising at base of tegulum, curved around prolateral margin of tegulum; tip of embolus supported by conductor.

Female. Total length 7.22 ± 1.01 mm; carapace 2.95 ± 0.28 mm long, 2.22 ± 0.21 mm wide (19 specimens measured). Color as in male (Fig. 593). Carapace often uniformly reddish brown. Epigynal median septum broad, flat, tongue-shaped, directed anteriorly; copulatory openings small, lying at base of median septum (Fig. 591). Copulatory tubes long, coiled, rather stout, enclosing bases of spermathecae; spermathecae large, bulbous, smooth, well separated (Fig. 592).

Comments. Individuals of *O. scalaris* are distinguished from those of the other species of the genus in Canada by the following characteristics: carapace and legs lacking black lines; embolus arising basally on tegulum; median septum broad and not reflexed at tip; and copulatory tubes coiled.



Figs. 591–596. Structures of *Oxyopes scalaris*. 591, epigynum, ventral view; 592, spermathecae, dorsal view; 593, body of female, dorsal view; 594, carapace of female, anterior view: 595, 596, palpus of male: 595, ventral view; 596, retrolateral view. *con*, conductor.



Map 91. Collection localities of *Oxyopes scalaris*.

Range. Southern British Columbia to Nova Scotia, south to northern Mexico. Brady (1964) also gives a locality in Labrador; this needs confirmation by further collections.

Biology. Adults of both sexes have been collected from May to August. Individuals of *O. scalaris* are frequent inhabitants of sagebrush and similar plants in the West and of pines at higher elevations in the West and East. Mating is brief, and females stand guard over the egg sacs, which are fastened securely to the needles of trees or shrubs. Cutler et al. (1977) summarize the available data on habitats, seasonal occurrence, prey capture, mating, and egg-sac construction.

Glossary

abdomen The posterior body division of a spider, divided from the cephalothorax by the pedicel.

alveolus The cup-like cavity situated on the ventral side of the cymbium of the male palpus and containing the genital bulb.

anal tubercle A small prominence at the tip of the abdomen; the anus is situated on its ventral surface.

anterior Pertaining to the foremost end of the body or to the foremost end of one of its main divisions.

anteriorly Toward the foremost end of the body.

anterolateral Pertaining to the foremost end and to the side of the body.

anterolaterally Toward the foremost end and toward the side of the body.

anteromesal Pertaining to the foremost end of the body and to the midline.

anteromesally Toward the foremost end of the body and toward the midline.

apophysis A spur or spine found on the male chelicerae, palpi, or legs; usually having a sexual function.

atrial Pertaining to the atrium.

atrium A cavity in the epigynal plate, with the copulatory openings of the female in its floor or walls; it may be partitioned or fully occupied by a median septum.

basal Pertaining to the base of an appendage or segment.

basally At or toward the base, or point of attachment, of an appendage or segment.

basitarsus The basal subdivision of the leg tarsus; missing in the palpus.

book lungs Paired book-like respiratory organs on the venter of the abdomen.

carapace The dorsal plate of the cephalothorax, which bears the eyes and the dorsal groove; the carapace represents the fused terga of the cephalothoracic segments.

cephalothorax The undivided head–thorax, or anterior body division, to which are appended the chelicerae, palpi, and legs.

chelicerae Paired organs for seizing and pinching, attached at the anterior end of the cephalothorax. Each chelicera comprises a large basal segment and a movable fang. Chelicerae arise between the mouth and the palpal segment in the early embryo but move to the front of the mouth and rostrum during embryonic development.

claw A short, curved, usually toothed process at the tip of the pretarsus of the leg or palpus.

colulus A small median sclerite on the venter of the abdomen, situated in the membranous area at the base of the anterior pair of spinnerets.

compound seta A seta with branches along its shaft.

conductor A structure in the male palpus that supports and protects the tip of the resting embolus.

copulatory openings The paired openings in the epigynal plate; they receive the male emboli during copulation.

copulatory tubes The paired tubes leading inward from the copulatory openings to the spermathecae.

coxa (pl., **coxae**) The first or most basal segment of a leg or palpus.

cuticle The outer layer of the body wall.

cymbium The tarsal segment of the male palpus, cupping the genital bulb in the alveolus on its ventral side.

dentate Toothed.

denticle A minute tooth.

distal Pertaining to the end of a leg or palpus farthest from the base.

distally Toward the distal end of a leg or palpus.

distitarsus The distal subdivision of the leg tarsus.

distomesal Pertaining to the tip and the midline.

distomesally Toward the tip and the midline.

dorsal Pertaining to the uppermost surface of the body or of an appendage.

dorsal groove A median furrow on the carapace, marking the presence of an ingrowth of the body wall to which the dilator muscles of the sucking pump are attached.

dorsally Toward the dorsum.

dorsum The entire upper surface of the body; also used for the upper surface of the abdomen alone.

emarginate Having a notched margin.

embolus The intromittent organ of the male palpus.

epigastric Pertaining to the ventral side of the abdomen.

epigynum The copulatory organ of the female, located in the midline anterior to the genital groove; the epigynum usually has a well-sclerotized plate in which the copulatory openings are found.

fang The piercing distal segment of the chelicera; the duct of the venom gland opens at its tip.

fang furrow A depression along the distomesal surface of the chelicera; the fang furrow receives the folded fang.

femur (pl., **femora**) The third (and usually the longest) segment from the base of a leg or palpus.

fertilization tubes The paired tubes by which semen stored in the spermathecae is conveyed to the eggs as they pass out of the body.

front That part of the carapace between the anterior margin and the anterior row of eyes.

genital bulb The male copulatory apparatus, lying within the alveolus of the cymbium.

genital groove A transverse groove on the venter of the abdomen in which lie the openings of the internal genitalia (ovaries or testes) and a pair of book lungs.

haematodocha A blood-distensible sac situated in the male palpus of wolf spiders.

hood A pocket-like structure at the anterior end of the epigynum of many spiders.

labium The lower lip, which closes the preoral cavity behind; the labium develops from the sternum of the embryonic palpal segment.

lateral Pertaining to the side.

laterally Toward one side.

longitudinal Lying parallel to the midline of the body or to the midline of a leg or palpus.

macroseta An erectile seta that arises from a minute membranous area on the legs and palpi.

median Pertaining to the middle.

median apophysis The appendage of the tegulum on the genital bulb; rarely absent.

median septum A longitudinal sclerite on the floor of the epigynal atrium.

mesal Pertaining to the midline.

mesally Toward the midline.

midline An imaginary line dividing the body or an appendage lengthwise into right and left halves.

palea A plate at the distal end of the genital bulb of most wolf spiders.

paleal process A sclerotized prominence situated distally on the palea of certain wolf spiders.

palp-coxal lobes The paired mesal lobes on the prolateral surfaces of the palpal coxae; they close the sides of the preoral cavity.

palpus (pl., **palpi**) One of a pair of leg-like appendages arising between the mouth and the first pair of legs; in adult male spiders, modified as an organ for copulation and for storing semen.

pars pendula A thin flap along the margin of the embolus.

patella The fourth segment from the base of the leg or palpus; the patella forms a rigid piece with the tibia.

pedicel The slender flexible connection between the cephalothorax and the abdomen.

posterior Pertaining to the hindmost end of the body or to the hindmost end of one of its main divisions.

posteriorly Toward the hindmost end of the body.

posterolateral Pertaining to the hindmost end and to the side of the body.

posterolaterally Toward the hindmost end and toward the side of the body.

posteromesal Pertaining to the hindmost end of the body and to the midline.

posteromesally Toward the hindmost end of the body and toward the midline.

preoral cavity The entrance passage to the mouth.

pretarsus The seventh or terminal segment of a leg or palpus; the pretarsus bears the claws.

procurved Curved forward. Denotes the anterior displacement of the ends of a transverse, otherwise straight or recurved, row (of eyes, for example) or groove.

prograde Denotes the normal orientation of the legs in spiders with the limbs not rotated on their bases, i.e., not laterigrade; also used to describe the mode of locomotion by such spiders.

prolateral Describes the lateral surface of a leg or palpus nearest the anterior end of the body when the appendage is extended at right angles to the longitudinal axis of the body.

prolaterally Toward the prolateral surface of the body.

prolaterobasal Pertaining to the prolateral side of the body and to the base.

prolaterobasally Toward the prolateral side of the body and toward the base.

prolaterodistal Pertaining to the prolateral side of the body and to the end.

prolaterodistally Toward the prolateral side of the body and toward the end of a leg or palpus.

prolateromesal Pertaining to the prolateral side of the body and to the midline.

prolateromesally Toward the prolateral side of the body and toward the midline.

prolateroventral Pertaining to the prolateral side of the body and to the ventral side.

prolateroventrally Toward the prolateral side of the body and toward the venter.

promargin The anterior margin of the cheliceral fang furrow.

recurved Curved backward. Denotes the posterior displacement of the ends of a transverse, otherwise straight or procurved, row (of eyes, for example) or groove.

retrolateral The lateral surface of a leg or palpus nearest the posterior end of the body when the appendage is extended at right angles to the longitudinal axis of the body.

retrolaterally Toward the retrolateral surface of the body.

retrolaterobasal Pertaining to the retrolateral side of the body and to the base.

retrolaterobasally Toward the retrolateral side of the body and toward the base.

retrolaterodistal Pertaining to the retrolateral side of the body and to the tip.

retrolaterodistally Toward the retrolateral side of the body and toward the tip.

retromargin The posterior margin of the fang furrow.

rostrum The upper lip, lying between the chelicerae and the mouth and closing the preoral cavity in front.

scape A median unpaired process of the epigynal plate, free at one end and usually directed posteriorly.

sclerite A thickened well-sclerotized plate in the body wall.

sclerotized Hardened and darkened through the tanning of proteins.

scopula (pl., **scopulae**) A brush of stiff, usually flattened setae along the ventral surface of the leg; a scopulate leg is one with a scopula.

segment One of a series of ring-like divisions into which the body or an appendage is divided.

seminal duct A tube that conducts semen from storage within the male genital bulb to the tip of the embolus.

serrated Notched like a saw.

seta (pl., **setae**) A bristle-like outgrowth of the body wall, secreted by a single cell and supplied with a nerve; setae form the usual covering of the spider's body.

spermatheca (pl., **spermathecae**) One of a pair of semen-storing organs in the female.

spermathecal organ A small prominence associated with the spermatheca and usually arising at or near the junction of the copulatory tube and the spermatheca.

spine A fixed, usually pointed, outgrowth of the body wall.

spinnerets The paired appendages at the posterior end of the abdomen through which liquid silk passes from the silk glands to the outside. Spinnerets are in three pairs: anterior, median, and posterior.

spiracle Tracheal opening in the body wall, located on the venter of the abdomen.

sternum The ventral surface of a body segment; also used for the fused sterna of the cephalothorax.

subtegulum A ring-like sclerite in the wall of the genital bulb.

tarsus (pl., **tarsi**) The sixth segment of a leg or palpus from the base; in legs, subdivided into basitarsus and distitarsus.

tegular lobe A sclerotized prominence situated retrolaterodistally on the tegulum of certain wolf spiders.

tegulum A sclerite (usually the largest) of the genital bulb.

tibia (pl., **tibiae**) The fifth segment of a leg or palpus from the base; the tibia forms a rigid piece with the patella.

tooth A spine found on the margins of the fang furrow and assisting in feeding; a tooth-like structure; a small outgrowth on the paired claws of the leg.

trachea The internal system of tubes by which respiration takes place; the openings of the tubes are the spiracles.

transverse Lying at right angles to the longitudinal axis of the body.

trochanter The second segment from the base of a leg or palpus.

truncate Squared at the tip rather than rounded or pointed.

tubercle A small, fixed, usually rounded prominence on the body wall.

venom gland The venom-secreting gland within the chelicera (and sometimes through the chelicera and into the cephalothorax); its duct opens at the tip of the fang.

venter The undersurface of the body; also used to denote the undersurface of the abdomen or of an appendage.

ventral Pertaining to the venter.

ventrally Toward the venter.

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